

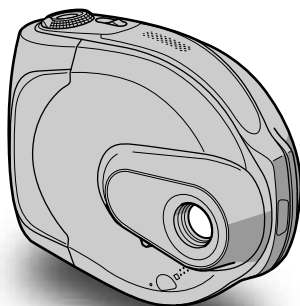
SONY®

2-597-462-11 (1)

Digital Video Camera Recorder

HANDYCAM

Operating Guide



DCR-DVD7



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DVD Handycam

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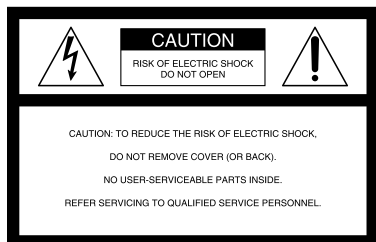


Read this first

Before operating the unit, please read this manual thoroughly, and retain it for future reference.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION

The use of optical instruments with this product will increase eye hazard. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

For customers in the U.S.A. and CANADA

RECYCLING LITHIUM-ION BATTERIES

Lithium-Ion batteries are recyclable. You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.

For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit <http://www.rbrc.org/>



Caution: Do not handle damaged or leaking Lithium-Ion batteries.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. DCR-DVD7

Serial No.

Model No. AC-

Serial No.

For customers in the U.S.A.

If you have any questions about this product, you may call:

Sony Customer Information Center
1-800-222-SONY (7669).

The number below is for the FCC related matters only.

Regulatory Information

Declaration of Conformity

Declaration of Conformity

Trade Name: SONY

Model No.: DCR-DVD7

Responsible Party: Sony Electronics Inc.

Address: 16450 W. Bernardo Dr, San Diego, CA 92127 U.S.A.

Telephone No.: 858-942-2230

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

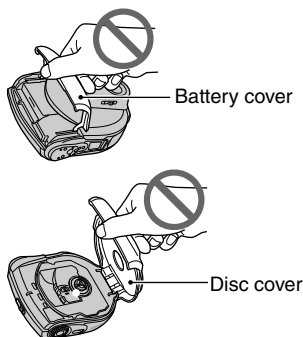
Notes on use

Your camcorder is supplied with 2 kinds of operations guides.

- “Operating guide” (This manual)
- “First Step Guide” for using the supplied software (stored on the supplied CD-ROM)

On using the camcorder

- Do not hold the camcorder by the following parts.



- When you operate your camcorder placed on a table or so, make sure it is so stable that there is no risk that the camcorder may fall down. Using the supplied stand (p. 16) is recommended.
- To prevent discs from being broken or recorded pictures from being lost, do not do the following when either of the respective lamps of the POWER switch (p. 20) or the ACCESS lamp (p. 23) is on:
 - to remove the battery pack or AC Adaptor from the camcorder.
 - to apply mechanical shock or vibration to the camcorder.

- Before connecting your camcorder to another device with a USB cable etc., be sure to insert the connector plug in the proper direction. If you insert the connector plug forcibly in the wrong direction, the terminal may be damaged, or this may cause a malfunction of your camcorder.

Notes on the Setup items, LCD screen and lens

- A setup item that is grayed out is not available under the current recording or playback conditions.
- The LCD screen is manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue, or green in color) that appear constantly on the LCD screen. These points are normal.
- Exposing the LCD screen or the lens to direct sunlight for long periods of time may cause malfunctions. Be careful when placing the camera near a window or outdoors.
- If you apply mechanical shock to around the lens or shake the camcorder back and forth, the picture may be distorted for a moment.
- Do not aim at the sun. Doing so might cause your camcorder to malfunction. Take pictures of the sun only in low light conditions, such as at dusk.

On recording

- Before starting to record, test the recording function to make sure the picture and sound are recorded without any problems. You cannot delete images once you record them on a DVD-R. Use a DVD-RW/DVD+RW (not supplied) for trial recording (p.13).
- Compensation for the contents of recordings cannot be provided, even if recording or playback is not possible

due to a malfunction of the camcorder, storage media, etc.

- TV color systems differ depending on the countries/regions. To view your recordings on a TV, you need an NTSC system-based TV.
- Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws. You cannot dub copyright protected software on your camcorder.

On this manual

- The images of the LCD screen used on this manual are captured using a digital still camera, and thus may appear different from what you see.
- The on-screen displays in each local language are used for illustrating the operating procedures. Change the screen language before using your camcorder if necessary (p.63).

About the Carl Zeiss lens

Your camcorder is equipped with a Carl Zeiss lens, which was developed jointly by Carl Zeiss, in Germany, and Sony Corporation, and produces superior images. It adopts the MTF* measurement system for video cameras and offers a quality typical of a Carl Zeiss lens.

* MTF stands for Modulation Transfer Function. The number value indicates the amount of light from a subject coming into the lens.

About the disc

- You can use 8cm DVD-Rs, 8cm DVD-RWs and 8cm DVD+RWs only. Use the discs with marks listed below.

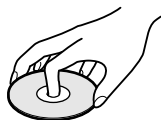


- For reliability and durability of recording /playback, we recommend that you use Sony discs or discs with the "for VIDEO CAMERA" mark for your DVD Handycam. Using a disc other than above may cause unsatisfactory recording/playback or you may not be able to remove the disc from your DVD Handycam.

* Depending on the place you bought, the disc has the or mark.

Notes on use

- Hold the disc by its edge while supporting the center hole lightly. Do not touch the recording side (the opposite of the printed side when using a single sided disc).
- Before shooting, be sure to remove dust and fingerprints from the disc with the cleaning cloth supplied with your camcorder. Otherwise you may not be able to record or play normally in some situations using that disc.
- When you set the disc in your camcorder, press firmly until it clicks. When the message [C:13:□□] appears on the LCD screen, open the disc cover and set the disc again.
- Do not attach any adhesive material such as a sticker on the surface of a disc. If you do so, the disc may become unbalanced, and this may cause a malfunction of the disc or your camcorder.



Care and storage of the discs

- Keep the disc clean, or the quality of the audio and video output may deteriorate.
- Clean the disc with the supplied cleaning cloth.

Wipe the disc from the center out. For dirt, clean the disc with a soft cloth slightly moistened in water, then remove the moisture with a soft, dry cloth. Do not use solvents such as benzine, cleaners intended for vinyl LPs or antistatic spray, as they may cause a malfunction to the disc.



- Do not expose the disc to direct sunlight or leave it in a humid place.
- When you carry or store the disc, put it in its case.
- When you want to write letters or marks, etc. on a single sided disc, write only on the printed side using an oil-based marker with a felt-tip, and do not touch the ink until it dries. Do not heat the disc or use a sharp-pointed tool, such as ball point pen. Do not dry the surface by heating. You cannot write on, or mark, on the double-sided discs.

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Recording

- To zoom
- To adjust the exposure for backlit subjects
- To adjust the focus for an off center subject
- To fix the exposure for the selected subject
- To add special effects
- To use a tripod

Playback

- To play back the images in sequence
- To use PB ZOOM

Recording/playback

- To check the remaining battery
- To turn off the operation confirmation beep
- To initialize the settings
- Other part names and functions

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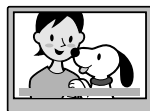
What you can do with your DVD Handycam

Your DVD Handycam records images on an 8cm DVD* disc, which makes it easier to record and view images.

You can enjoy your DVD Handycam in ways that are different from those of other media.

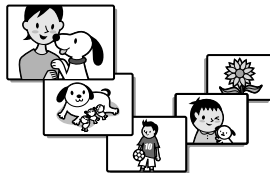
A VISUAL INDEX screen shows the disc contents at a glance

Movies and still images are recorded on the same disc. You can find the desired scene quickly using this index (p. 27, 31).



A Slide show plays back still images, one after another

You can play back still images one after another using the Slide show function. You can also enjoy the Slide show on a DVD player if you finalize** the disc (p. 28, 40).



Using your DVD Handycam

Preparing



(p. 16)

Recording



(p. 26, 30)

Playing back
on the DVD
Handycam



(p. 27, 31)

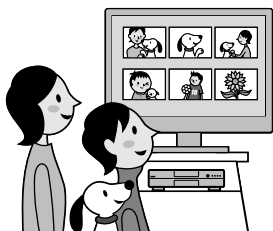
Playing back on
DVD players
(Finalize** the disc)



(p. 28, 40)

Playing back the recorded disc on other DVD devices

You can play back a disc on other DVD players or on the DVD drive of a computer if you finalize** it. You can also create a DVD menu that helps you to find the desired image quickly, from a list of thumbnails (p. 28, 40).



Editing a disc using the supplied software

You can create your own DVD discs adding special effects or music to images using the Picture Package software supplied with your camcorder (p. 75).



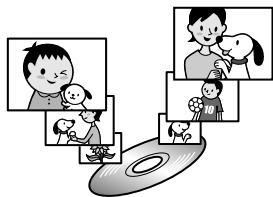
* DVD (Digital Versatile Disc) is a high capacity optical disc which enables you to record images. In this manual, an 8cm DVD disc is described as a "disc."

**Finalizing means converting a recorded disc so that it can be played back on other DVD playback equipment (p. 28, 40). After finalizing a disc, you may not be able to record on it again on your DVD Handycam, depending on the disc type and the recording format (p. 13).

DVD functions different from those of tape media

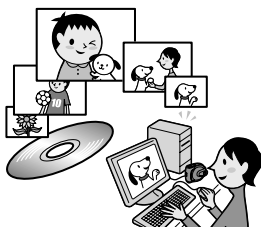
Easy to record, then to play back recordings without rewinding

You can start recording and check the recorded images without rewinding or fast forwarding. Images are stored on the free space on the disc automatically. Therefore, you will not delete important images accidentally.



Transferring data to your computer at high speed

You can import data to your computer in less time than the actual recording time. If your computer supports Hi-Speed USB (USB2.0), you can transfer data at a faster rate.



Adjusting the image quality that suits each scene

You can record images on a disc utilizing the disc capacity more effectively thanks to the VBR* encoding system that adjusts image quality automatically according to the scene being recorded. Recording an object that moves fast requires more space to record clear images on a disc. Therefore, the available recording time may be shorter than normal.











* VBR stands for Variable Bit Rate. This feature enables your DVD Handycam to adjust the bit rate (recording capacity per a certain time) automatically in accordance with each of the recorded scenes.

Choosing a disc

What kinds of disc can I use?

The kinds of disc that you can use in your DVD Handycam are as follows. When you use a DVD-RW, you can choose the recording format from VIDEO mode or VR mode.

Disc type and the recording format	 8cm DVD-R	 8cm DVD-RW		 8cm DVD+RW
		VIDEO mode	VR mode	
Marks used in this manual				
Features	This kind of disc can be recorded only once.	This kind of disc can be overwritten repeatedly, even when the disc is full, if you format* it.		

- Use Sony disc or discs with the  mark. Depending on the place you bought it, the disc has the  mark.

Differences in the recording format on DVD-RWs

VIDEO mode has wide compatibility with other players.

VR mode (Video Recording mode) enables you to edit, such as deleting or dividing scenes, the material you have recorded on your DVD Handycam. Once you finalize the disc, you can play back the disc with a DVD player that supports VR mode.

- Refer to the specifications of your playback equipment for additional compatibility information.

Note on DVD+RW

If you playback the DVD+RW recorded in [16:9WIDE] (p. 55) on a DVD player connected to a 4:3 TV which does not support 16:9 pictures, the picture will appear compressed lengthwise. If the DVD+RW is recorded in the default setting, the picture will appear in 4:3 ratio when it is played back under the above condition.

- Refer to the instruction manuals supplied with your TV.



Examples of incompatible discs





- 12cm DVD-R
- 12cm DVD-RW
- 12cm DVD+RW
- DVD+R
- DVD-RAM
- DVD-ROM
- CD
- CD-R
- CD-ROM
- CD-RW

* Formatting makes a disc ready for recording. Also, formatting removes all images data from a previously recorded disc, allowing you to recover the full capacity of that disc. Therefore, you can use the disc repeatedly (p. 47).

Do the features differ according to the disc?

What you can do with your disc differs, depending on the disc type and the recording format used.

The number in the parentheses indicates the reference page.

Disc type					
Recording movies and still images (26, 30)	●	●	●	●	●
Playing back the last scene immediately (34)	●	●	●	●	●
Deleting the last scene immediately (34)	—	●	●	●	●
Playing back recordings on other DVD players if you finalize the disc ¹⁾ (28, 40)	●	●	●	●	●
Playing back recordings on other DVD players even if you do not finalize the disc ¹⁾ (40)	—	—	—	● ²⁾	—
Creating the DVD menu when you finalize the disc (41)	●	●	—	●	—
Recording additional scenes after finalizing the disc (46)	—	● ³⁾	●	● ⁴⁾	—
Using the disc repeatedly by formatting it (47)	—	●	●	●	—
Editing images on your DVD Handycam (66)	—	—	●	—	—
Transferring recorded scenes to your computer and editing them (75)	●	●	●	●	●

¹⁾ DVD discs recorded by Sony DVD Handycam are designed to be played back on home DVD players, DVD recorders, and computer DVD drives. DVD-RWs recorded in the VR mode must be played back on DVD playback equipment that supports the VR mode. Note that playback on all home DVD players, DVD recorders, and computer DVD drives may not be guaranteed. Refer to the specifications of your playback equipment for additional compatibility information.

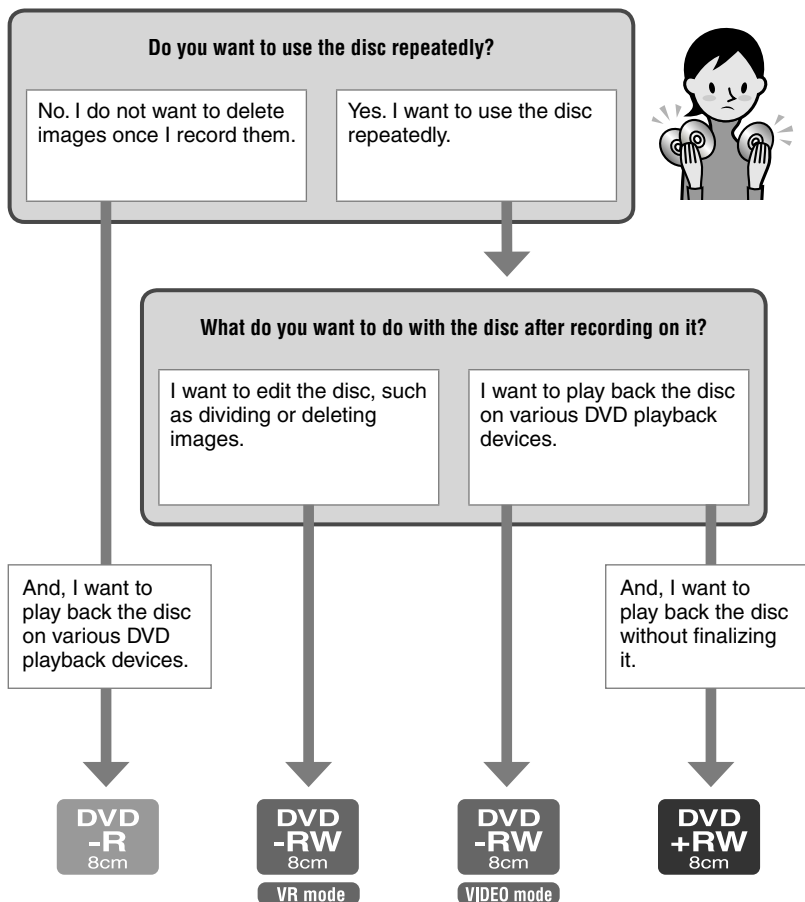
²⁾ Do not try to play back these discs in the DVD-ROM drive on your computer. This may cause a malfunction.

³⁾ Unfinalizing is required (p. 46).

⁴⁾ A confirmation dialog asking you if you want to record additional material appears (p. 46).

How to choose a disc

The figure below helps you to choose the best disc for your purpose.



Did you find the disc type that suits your purpose?
Now, enjoy your DVD Handycam.

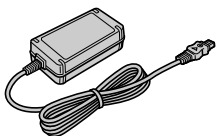
Step 1: Checking supplied items

Make sure that you have following items supplied with your camcorder. The number in the parentheses indicates the number of that item supplied.

8cm DVD-R DMR30 (1) (p. 13)



AC Adaptor (1) (p. 17)



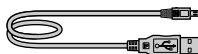
Power cord (1) (p. 17)



A/V connecting cable (1) (p. 38, 72)



USB cable (1) (p. 75)

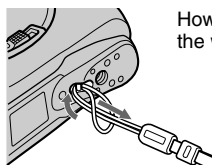


Wireless Remote Commander (1) (p. 37)



A button-type lithium battery is already installed.

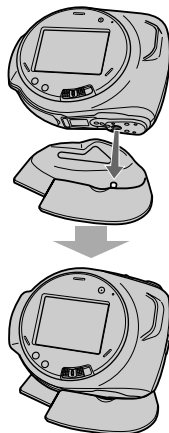
Wrist strap (1)



How to attach the wrist strap

Stand (1)

How to place your camcorder on the stand



Cleaning cloth (1)

LCD protective sheet (2) (p. 102)

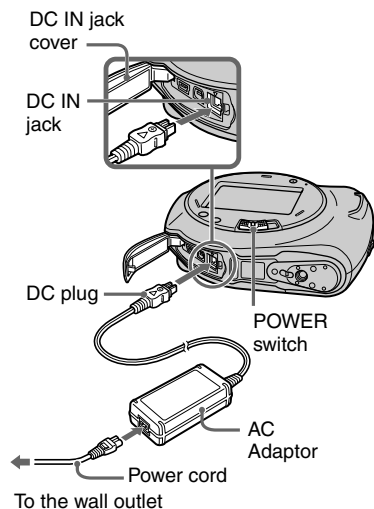
Rechargeable battery pack NP-FA50 (1) (p. 17)

CD-ROM "Picture Package Ver.1.8" (1) (p. 75)

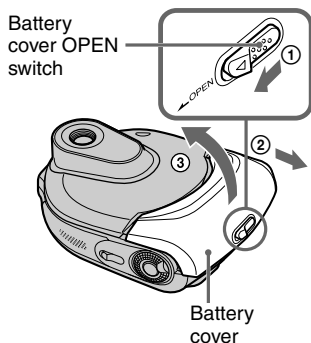
Operating Guide (This manual) (1)

Step 2: Charging the battery pack

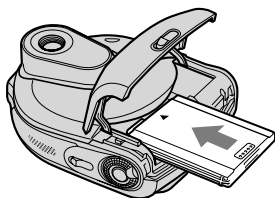
You can charge the battery after inserting the “InfoLITHIUM” battery pack (A series) (p. 99) into your camcorder.



- 1 While sliding the battery cover OPEN switch in the direction of the arrow ①, move the battery cover toward the direction of the arrow ②. Then open the cover ③.**



- 2 Insert a battery pack to the end with the ▲ mark facing out.**



- 3 Close the battery cover.**

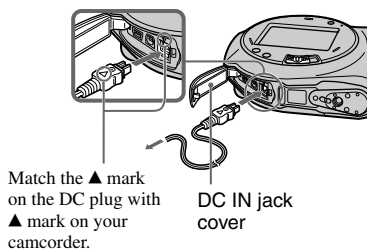
Be sure to close the cover completely.

- 4 Slide the POWER switch in the direction of the arrow to set it to OFF (CHG) (The default setting).**



- 5 Connect the AC Adaptor to the DC IN jack on your camcorder.**

Open the DC IN jack cover to connect the AC Adaptor.



Step 2: Charging the battery pack (continued)

6 Connect the AC Adaptor to the wall outlet using the power cord.

The CHG (charge) lamp lights up and charging starts.



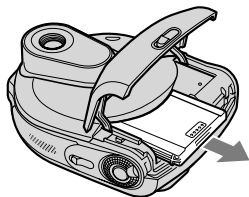
7 The CHG (charge) lamp turns off when the battery is fully charged. Disconnect the AC Adaptor from the DC IN jack on your camcorder.

Disconnect the AC Adaptor holding both your camcorder and the DC plug.

To remove a battery pack

Slide the battery cover OPEN switch in the same way as when installing a battery pack. After opening the battery cover, pull the battery pack out.

- When you remove the battery pack, make sure that none of the respective lamps of the POWER switch is on.



When storing the battery pack

Use up the battery pack completely if you do not intend to use it for a long time (p. 99).

To use an outside power source

Make the same connections as you do when charging the battery pack. The battery pack will not lose its charge in this case.

Charging time (full charge)

Approximate charging time (min.) required when you fully charge an empty battery pack.

Battery pack	Charging time
NP-FA50 (supplied)	125
NP-FA70	155

Recording time

Approximate time (min.) available when you use a fully charged battery pack.

Battery pack	Continuous recording time	Typical recording time
NP-FA50 (supplied)	90	40
	100	45
NP-FA70	170	80
	190	90

If you record under the following conditions:

Top: When the LCD backlight is on

Bottom: When the LCD backlight is off

Playback time

Approximate time (min.) available when you use a fully charged battery pack.

Battery pack	LCD screen backlight on	LCD screen backlight off
NP-FA50 (supplied)	100	115
NP-FA70	190	215

On the battery pack

- Before changing the battery pack, slide the POWER switch to OFF (CHG).
- The CHG (charge) lamp may flash during charging, or BATTERY INFO (p. 33) may not be correctly displayed under the following conditions:
 - The battery pack is not inserted correctly.
 - The battery pack is damaged.
 - The battery pack is fully discharged.
(For BATTERY INFO only.)
- The power will not be supplied from the battery as long as the AC Adaptor is connected to the DC IN jack of your camcorder, even when the power cord is disconnected from the wall outlet.

On the charging/recording/playback time

- Times are measured at 25 °C (77°F). (10-30°C (50-86°F) is recommended.)
- Available recording and playback time will be shorter when you use your camcorder in low temperatures.
- The available recording and playback time will be shorter depending on the conditions under which you use your camcorder.

On the AC Adaptor

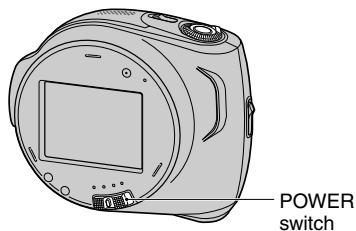
- Use the nearby wall outlet when using the AC Adaptor. Disconnect the AC Adaptor from the wall outlet immediately if any malfunction occurs while using your camcorder.
- Do not use the AC Adaptor placed in a narrow space, such as between a wall and furniture.
- Do not short-circuit the DC plug of the AC Adaptor or battery terminal with any metallic objects. This may cause a malfunction.

PRECAUTION

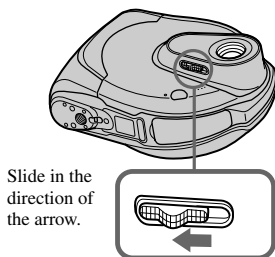
- Even if your camcorder is turned off, AC power (house current) is still supplied to it while connected to the wall outlet via the AC Adaptor.

Step 3: Turning the power on, and holding your camcorder

To record or play back, slide the POWER switch to turn on the respective lamp. When using your camcorder for the first time, the [CLOCK SET] screen appears (p. 22).

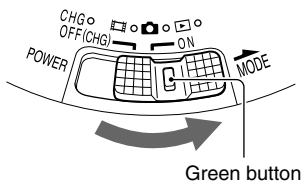



1 Open the lens cover.





2 Turn on the power by sliding the POWER switch in the direction of the arrow while pressing the green button in the center.

When you record or play back, switch the power mode by sliding the POWER switch in the direction of the arrow until the respective lamp lights up.



 **(Movie):** To record movies

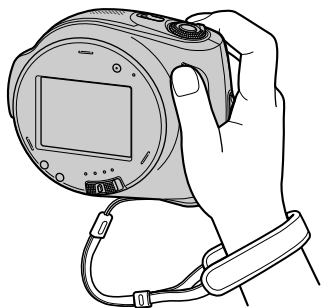
 **(Still):** To record still images

 **(Play/Edit):** To play back pictures on your camcorder, or to edit them (DVD-RW: VR mode only)



- When you turn on the power of your camcorder after setting the date and time ([CLOCK SET], p. 22), the current date and time will be displayed on the LCD screen for a few seconds.

3 Hold your camcorder correctly.



To turn off the power

Slide the POWER switch to OFF (CHG).

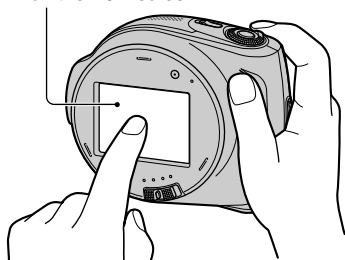
- At the time of purchase, the power will be set to turn off automatically if you leave your camcorder without any operation attempted for approximately 5 minutes to save battery power ([A.SHUT OFF], p. 62).

Step 4: Using the touch panel


You can play back recorded pictures (p. 27, 31), or change the settings (p. 48) using the touch panel.

Hold your camcorder firmly, then touch the LCD screen as illustrated.

Touch the button on the LCD screen




Changing the language setting


You can change the on-screen displays to show messages in a specified language. Select the screen language in [LANGUAGE] on  TIME/LANGU. (p. 63).

To hide the screen indicators

Press DISP/BATT INFO to toggle the screen indicators such as counter on or off.

To darken the LCD screen

Press and hold DISP/BATT INFO for a few seconds until  appears.

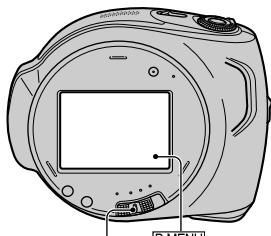
This setting is practical when you use your camcorder in bright conditions or you want to save battery power. The recorded picture will not be affected by the setting. To cancel, press and hold DISP/BATT INFO until  disappears.

- See [LCD SET] - [LCD BRIGHT] (p. 60) to adjust the brightness of the LCD screen.

Step 5: Setting the date and time

Set the date and time when using this camcorder for the first time. If you do not set the date and time, the [CLOCK SET] screen appears every time you turn on your camcorder or slide the POWER switch.

- If you do not use your camcorder for **about 2 months**, the built-in rechargeable battery gets discharged and the date and time settings may be cleared from the memory. In that case, charge the rechargeable battery and then set the date and time again (p. 103).

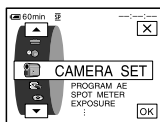


POWER switch

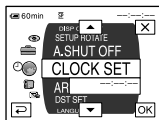
P-MENU

Skip to step 4 when you set the clock for the first time.

1 Touch [P-MENU] → [SETUP].

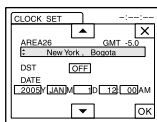


2 Select TIME/LANGU. with / , then touch [OK].

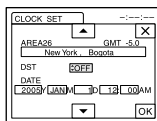


3 Select [CLOCK SET] with / , then touch [OK].

4 Select the desired geographical area with / , then touch [OK].

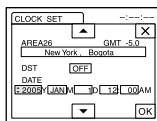


5 Set [DST] or [SUMMERTIME] to [ON] with / , if necessary, then touch [OK].



6 Set [Y] (year) with / , then touch [OK].

You can set any year up to the year 2079.



7 Set [M] (month), [D] (day), hour and minute, then touch [OK].

The clock starts.

For midnight, set it to 12:00 AM.

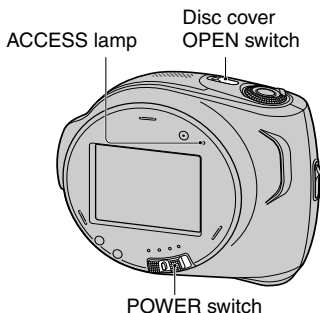
For midday, set it to 12:00 PM.

- Refer to page 98 for information concerning "World time difference."
- Instead of [DST], [SUMMERTIME] is displayed for some models.

Step 6: Inserting a disc

A new 8 cm DVD-R, DVD-RW, or DVD+RW is required for recording (p. 13).

- Remove dust or fingerprints from the disc beforehand, using the cleaning cloth supplied with your camcorder (p. 5).

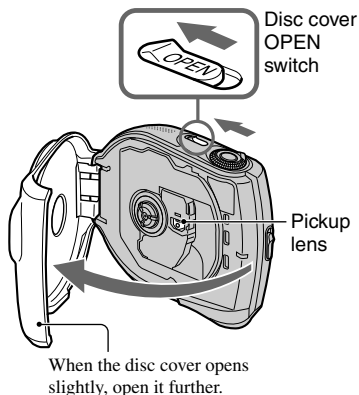


1 Check that the power of your camcorder is on.

- You can remove the disc when a power source is connected to your camcorder even when your camcorder is turned off. However, the disc recognition process (step 4) does not start.

2 Slide the disc cover OPEN switch in the direction of the arrow (←OPEN).

[PREPARING TO OPEN] appears on the LCD screen. Then the opening melody sounds once, and the camcorder beeps. After the beeps stop, the disc cover opens slightly automatically.



- Be careful not to obstruct the opening or closing of the disc cover, with your hand or other objects.
- Be careful not to catch the wrist strap when closing the disc cover. This may cause your camcorder to malfunction.

3 Set the disc with the recording side facing your camcorder, then press the center of the disc until it clicks.



- Do not touch the recording side of the disc or pickup lens. For details about pickup lens, see page 103.

4 Close the disc cover.

Your camcorder starts recognizing the inserted disc.

It may take some time to recognize the disc depending on the disc type and condition.

■DVD-R

You can start recording immediately after [DISC ACCESS] disappears from the LCD screen. You do not need to proceed to steps after step 5.

■DVD-RW

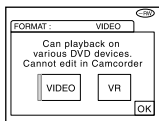
Select the recording format, then format the disc. Proceed to step 5.

■DVD+RW

The [FORMAT] screen appears.
Proceed to step 6.

- During Easy Handycam operation (p. 25), [Format the disc? If not, remove the disc.] appears. Touch **[OK]** then Proceed to step 7.

5 Select the recording format for a DVD-RW, and touch **[OK]**.



■VIDEO mode

You can play back the disc on most of DVD players if you finalize it.

■VR mode

You can edit, delete pictures, or divide movies on your camcorder (p. 66). However, the disc can be played back only on DVD players that support VR mode when you finalize it.

7 Touch **[OK]** when [Completed.] appears.

When the formatting is completed, you can start recording on the DVD-RW or the DVD+RW.

- Do not remove the battery pack or disconnect the AC Adaptor while formatting.

To remove the disc

Perform steps 1 and 2 to open the disc cover, then remove the disc.

It may take some time to remove the disc depending on the disc condition or recorded materials.

- Do not apply shock or vibration to your camcorder while the ACCESS lamp lights up or flashes, or [DISC ACCESS] or [PREPARING TO OPEN] is displayed on the LCD screen.
- If you close the disc cover with the disc set incorrectly, it may cause your camcorder to malfunction.
- After your camcorder recognizes the disc, disc information such as the date you started to use it and information on previously recorded areas appears for about 8 seconds. The information on previously recorded areas may not be displayed correctly depending on the condition of the disc.
- To delete all of the previously recorded pictures from a DVD-RW/DVD+RW, then to use it again to record new pictures, see "Deleting all of the scenes on the disc (Formatting)" on page 47.

6 Touch **[YES]** → **[YES]**.

Operate your camcorder with ease

With this Easy Handycam operation, most of the camera settings are automatically adjusted optimally, which frees you from detailed adjustment.

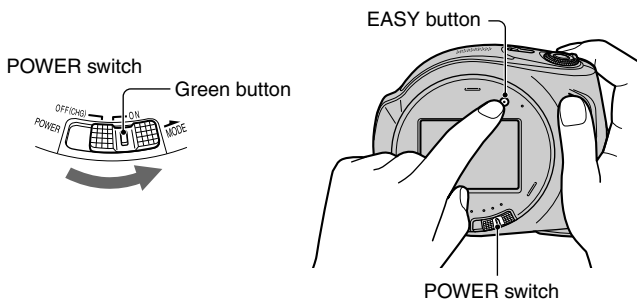
Since only basic functions become available and screen font size increases for easy viewing, even first time users can enjoy easy operation.

Complete the preparations described in steps 1 to 6 (p. 16 to 23) before operation.

- When inserting a new DVD-RW, it will be formatted in VIDEO mode.
- When using a DVD-RW disc formatted in VR mode, you cannot use the editing function (p. 66).

If you do not intend to use the Easy Handycam operation, go to page 30.

- 1 Turn on the power by sliding the POWER switch in the direction of the arrow while pressing the green button in the center.**



- 2 Press EASY.**



Easy Handycam
operation
ON

Now try recording ➞

To cancel Easy Handycam

Press EASY again.

The EASY lamp turns off.

- If you turn off the power without canceling Easy Handycam operation, your camcorder turns on in Easy Handycam operation automatically when you turn on the power.

During Easy Handycam operation

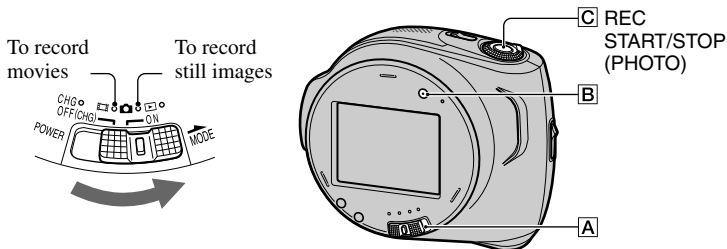
- You cannot use some buttons or switches (p. 26, 27), and some setup items (p. 50).
- If you set an invalid operation, [Invalid during Easy Handycam operation] appears.

Recording with ease

During Easy Handycam operation, the [REC MODE] of movies and the [QUALITY] of still images are set to the default settings (p. 56, 59).

1 Slide the POWER switch **A** repeatedly to light up the (Movie) or (Still) lamp.

Make sure the EASY lamp **B** lights up in blue. If not, press EASY to light it up (p. 25).



2 Start recording.

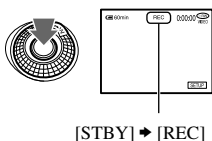
To record movies or still images, press the REC START/STOP (PHOTO) **C** for both operations.

Movies



Press REC START/STOP (PHOTO)

C.



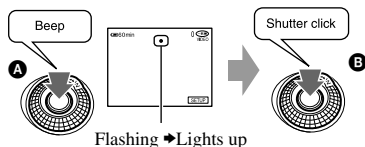
To stop recording, press it again.


Still Images



Press REC START/STOP (PHOTO)

C lightly to adjust the focus (**A**), then press it fully (**B**).



A shutter sound is heard. When  disappears, the image is recorded.

To record the next images

Perform step 2.

- You can continue recording on the same disc if there is space remaining, unless it has not been finalised (p. 28), when:
 - you turn off the power, then turn it on again.
 - you remove a disc from your camcorder, then insert it again.

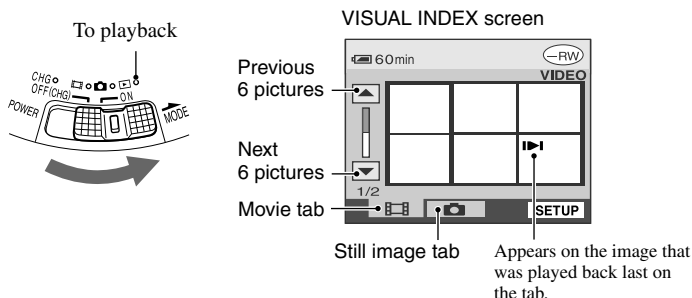
- When you record in Easy Handycam operation, you cannot use following functions:
 - BACK LIGHT (p. 32)
 - Turning off the backlight of the LCD screen (p. 21)
 - Checking/Deleting the last scene (p. 34)

Playing back with ease

1 Slide the POWER switch [A] repeatedly to light up the [▶] (Play/Edit) lamp.

The VISUAL INDEX screen appears on the LCD screen.

Make sure the EASY lamp [B] lights up in blue. If not, press EASY to light it up (p. 25).

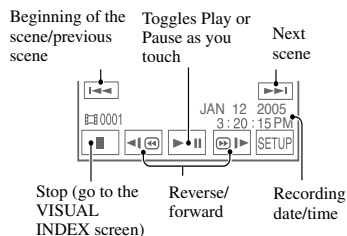


2 Start playing back.

Movies



Touch the Movie tab, then the movie to be played back.

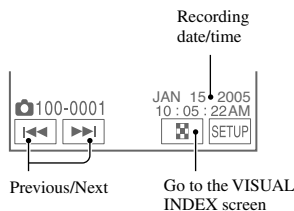


When the selected movie has played back to the end, the screen returns to the VISUAL INDEX screen.

Still Images



Touch the Still image tab, then the still image to be played back.



- Touch [◀] [⏮] / [⏭] [▶] during pause to play back movie slowly.
- When you touch a movie marked with [▶], you can play it back from the point you have stopped previously. When you record a new image, [▶] appears on the image.

- When you playback during Easy Handycam operation, you cannot use following functions:
 - PB ZOOM (p. 33)
 - Turning off the backlight of the LCD screen (p. 21)

Preparation for playing back on a DVD player (Finalizing)

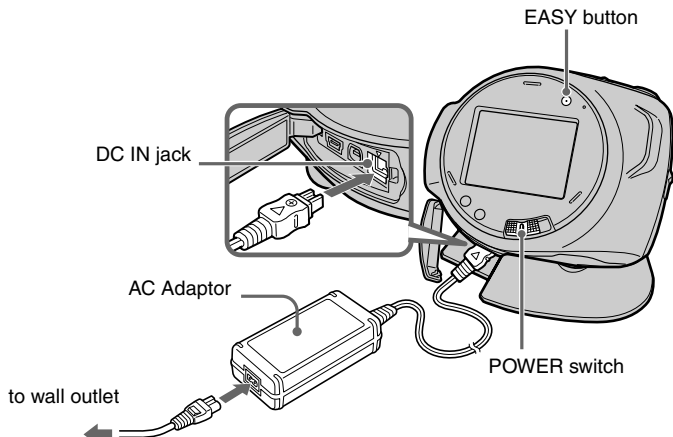
With Easy Handycam operation, your DVD Handycam sets up the following options automatically. Therefore, you can finalize a disc easily.

- creating a DVD menu to display images as thumbnails on a DVD player, etc (p. 41).
- creating a Photomovie to play back still images on a DVD player, etc (p. 42).

If you want to customize the settings above and finalize a disc, cancel Easy Handycam operation, then finalize the disc normally (p. 40).

- A DVD-R cannot be overwritten once you finalize it even when there is space to record.
- If you finalize a DVD-RW (VIDEO mode)/DVD+RW, you cannot record additional material on the disc during Easy Handycam operation. Cancel Easy Handycam operation, then follow the steps on page 46.

-
- 1 Place your camcorder in a stable position. Connect the AC Adaptor to the DC IN jack on your camcorder.**



- Be sure to use the AC Adaptor to prevent your camcorder from running out of power during finalizing.

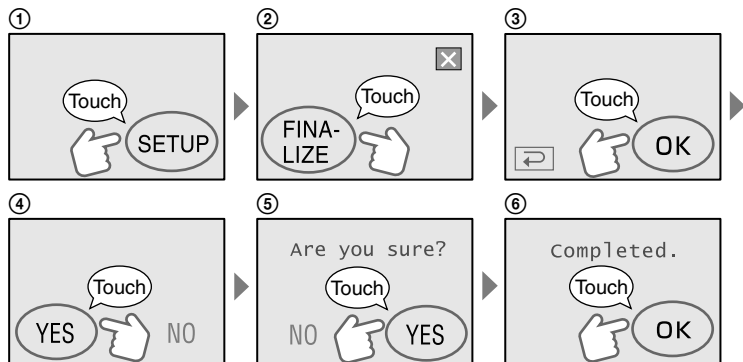
-
- 2 Turn on your camcorder and make sure the EASY lamp lights up.**

When the EASY lamp is off, press EASY to set the Easy Handycam operation to on.

-
- 3 Insert the disc to be finalized.**

See "Step 6: Inserting a disc" on page 23 for details.

4 Touch the LCD screen in the following steps.



- Do not apply shock or vibration to your camcorder, and do not disconnect the AC Adaptor during finalizing.
- The shorter the amount of material recorded, the longer it takes for finalizing.

5 Remove the disc from your camcorder.

Enjoy watching images on the DVD player, etc.

Refer also to the instruction manuals supplied with the DVD players, etc.

Deleting all the scenes after playback (format) (DVD-RW:VIDEO mode/DVD+RW)

If you format the disc, the disc recovers the used capacity and is reusable for recording thereafter.

If you want to reuse a DVD-RW to record in VR mode, format the disc after canceling Easy Handycam operation (p. 47).

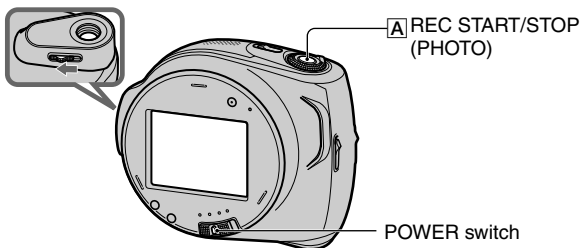
- **Note that you cannot recover a scene once you delete it.**

Touch the LCD screen in the following steps.

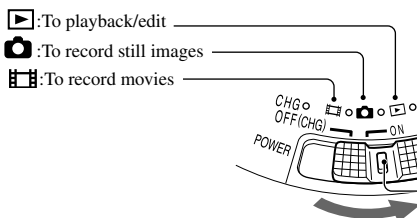
- ① [SETUP]
- ② [FORMAT]
- ③ [YES]
- ④ [YES]
- ⑤ [OK]

Recording

Open lens cover by sliding the switch in the direction of the arrow.



1 Slide the POWER switch repeatedly to light up the respective lamp.



Slide the POWER switch in the direction of the arrow while pressing the green button if the POWER switch is in the OFF (CHG) position.

2 Start recording.

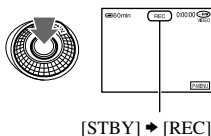
To record movies or still images, press the REC START/STOP (PHOTO) **A** for both operations.

Movies



Press REC START/STOP (PHOTO)

A.



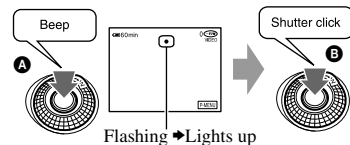
To stop recording, press it again.

Still Images



Press REC START/STOP (PHOTO)

A lightly to adjust the focus (**A**), then press it fully (**B**).



A shutter sound is heard. When **||||** disappears, the image is recorded.

To check or delete the last recording (Review/Review deleting)

See page 34.

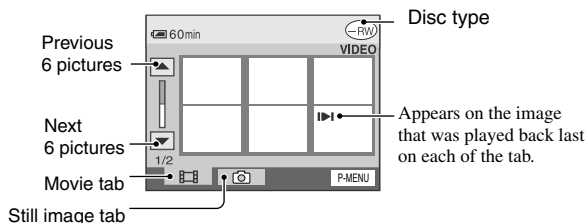
To record the new movies/still images

Even the disc was once removed, you can continue recording on the disc if there is space remaining. Perform step 2.

Playback

1 Slide the POWER switch repeatedly to light up the (Play/Edit) lamp.

The VISUAL INDEX screen appears on the LCD screen.

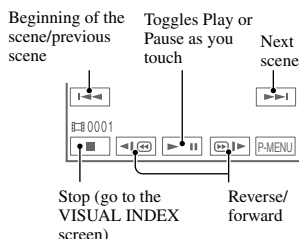


2 Start playing back.

Movies



Touch the **Movie tab**, then the movie to be played back.

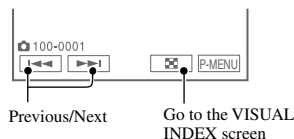







When the selected movie is played back until the end, the screen returns to the VISUAL INDEX screen.

Still Images



Touch the **Still image tab**, then the still image to be played back.



- Touch   /  during pause to play back movie slowly.
 - One touch makes the reverse/fast forward approximately 5 times faster; 2 touches makes it approximately 10 times* faster.
 - * Approx. 8 times faster for a DVD+RW
 - When you touch a movie marked with , you can play it back from the point you have stopped previously.
- When you record a new image,  appears on the image.

To adjust the volume

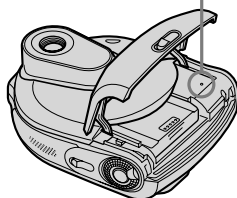
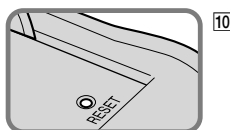
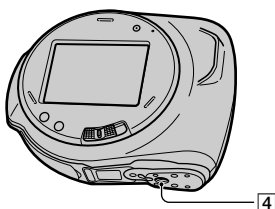
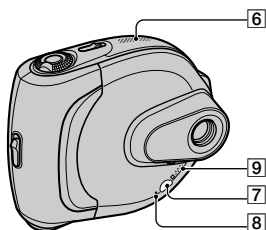
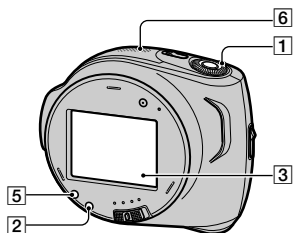
Touch **[P-MENU]** → **[VOLUME]**, then adjust it with  / .

- If you cannot find **[VOLUME]** in **[P-MENU]**, touch **[SETUP]** (p. 59).

To play back the disc on other DVD devices

See page 40.

Functions used for recording/playback, etc.



Recording

To zoom ①

Move the power zoom lever ① slightly for a slower zoom. Move it further for a faster zoom.

Wider range of view: (Wide)




Close view: (Telephoto)



- Do not remove your finger from the power zoom lever when you are zooming. If you do so, the sound of the lever moving may be recorded.
- The minimum distance required between your camcorder and the subject to get a sharp focus is about 1 cm (about 1/2 inch) for wide angle and about 80 cm (about 2 5/8 feet) for telephoto.
- You can set [DIGITAL ZOOM] (p. 55) if you want to zoom to a level greater than 10 ×.

To adjust the exposure for backlit subjects ②

To adjust the exposure for backlit subjects, press BACK LIGHT ② to display . To cancel the back light function, press BACK LIGHT again.

To adjust the focus for an off center subject ③

See [SPOT FOCUS] on page 54.

To fix the exposure for the selected subject ③

See [SPOT METER] on page 53.

To add special effects ③

See  PICT. APPLI. on page 57.

To use a tripod ④

Attach the tripod (optional: the length of the screw must be less than 5.5 mm) to the tripod receptacle ④ using a tripod screw.

Playback

To play back the images in sequence [3]

See [SLIDE SHOW] on page 58.

To use PB ZOOM [1]

You can magnify pictures from about 1.1 to 5 times the original size.

Magnification can be adjusted with the power zoom lever [1].

- ① Play back the picture you want to magnify.
- ② Magnify the picture with T (Telephoto). A frame appears on the LCD screen.
- ③ Touch the portion that you want to display in the center of the LCD screen.
- ④ Adjust the magnification with W (Wide angle)/T (Telephoto).

To cancel, touch [END].

To initialize the settings [10]

Press RESET [10] to initialize all the settings, including settings for date and time. (Setup items customized on Personal Menu are not initialized.)

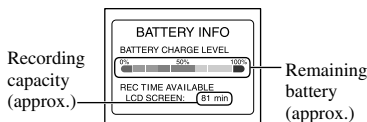
Other part names and functions

- [6] Built-in stereo microphone
- [7] Remote sensor
Point the Remote Commander (p. 37) towards the remote sensor to operate your camcorder.
- [8] Recording lamp
The recording lamp lights up in red during recording (p. 62).
- [9] Speaker
Sounds come out from the speaker.
• For how to adjust the volume, see page 31.

Recording/playback

To check the remaining battery [5]

Set the POWER switch to OFF (CHG), and then press DISP/BATT INFO [5]. If you press this button once, the BATTERY INFO appears on the screen for about 7 seconds. If you press and hold the button for a while, this information is displayed for about 20 seconds.



To turn off the operation confirmation beep [3]

See [BEEP] (p. 62) to set the operation confirmation beep.




Checking/Deleting the last scene (Review/Review deleting)

You can check or delete the last recorded scene.

However, you cannot delete it if:

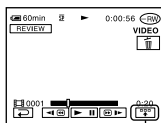
- you have removed the disc.
- you have recorded the new scenes.

Checking the last scene (Review)


- 1 Slide the **POWER** switch to light up the  (Movie) or  (Still) lamp, then touch .



The playback of the latest scene starts.

Movie

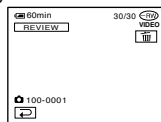


Touch to display the function buttons below.


 : Return to the beginning of the viewing movie.

 /  : Adjust the volume.

Still image



To return to recording

Touch .

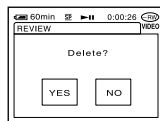
- The recording data (DATA CODE) does not appear on the Review screen.

Deleting the last scene (Review deleting) (DVD-RW/DVD+RW only)


If the checked scene is unnecessary, you can delete it on the spot.

Data once recorded on DVD-Rs cannot be deleted.

- 1 Press  during the review.



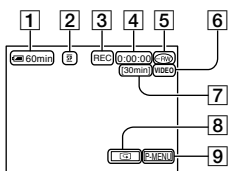
- 2 Touch [YES].

- You cannot recover a scene once you delete it.
- You can only delete the last recorded scene. When  is grayed out, you cannot delete the scene due to the following reasons.
 - The last recorded scene has been already deleted.
 - There is a movie or a still image that has been recorded just after the scene being played back.

Indicators displayed during recording/playback

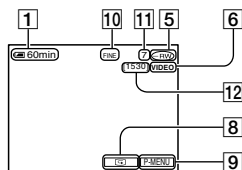
() is a reference page.
The indicators during recording will not be recorded.

Recording Movies



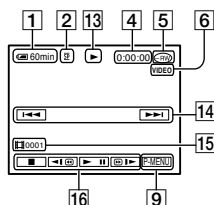
- 1 Remaining battery (approx.) (33)
- 2 Recording mode (**HQ** or **SP** or **LP**) (59)
- 3 Recording status ([**STBY**] (standby) or [**REC**] (recording))
- 4 Counter (hour: minute: second)
- 5 Disc type (13)
- 6 Recording format of a DVD-RW (13)
- 7 Remaining time of the disc (approx.) (61)
- 8 Review button (34)
Displays the most recently recorded image.
Touch to return to standby.
- 9 Personal Menu button (64)

Recording still images



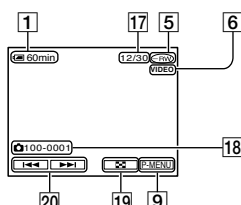
- 10 Quality ([**FINE**] or [**STD**]) (56)
- 11 The number of recorded still images
- 12 The number of recordable still image (approx.) (61)

Viewing movies



- 13 Playback mode
- 14 Previous/Next button (27, 31)
- 15 Scene number
- 16 Video operation buttons (27, 31)

Viewing still images

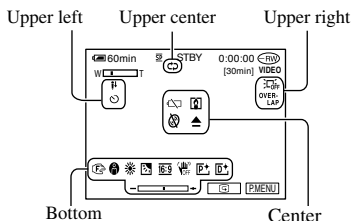


- 17 Number of played back still images / Total number of recorded still images
- 18 Data file name
- 19 VISUAL INDEX button (27, 31)
- 20 Previous/Next button (27, 31)

Indicators displayed during recording/playback (continued)

Indicators on the LCD screen

When you can change the setup items, or during recording or playback, following indicators are displayed.



Upper left

Indicator	Meaning
	Self-timer recording (55)
	MICREF LEVEL low (60)

Upper center

Indicator	Meaning
	Repeat of Slide show (58)

Upper right

Indicator	Meaning
WHITE-FADER BLACK-FADER OVER-LAP WIPE	Fader (57)
	LCD backlight off (21)

Center

Indicator	Meaning
	Color Slow Shutter (54)
	Warning (93)

Bottom

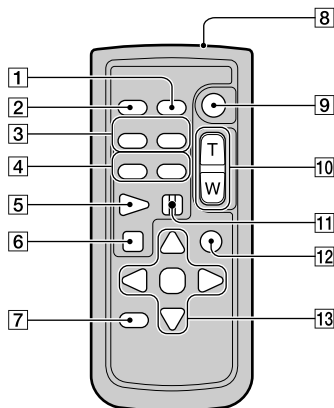
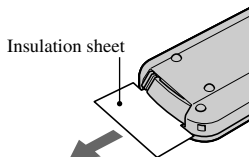
Indicator	Meaning
	Picture effect (58)
	Digital effect (58)
	Manual focus (54)
	PROGRAM AE (52)
	Backlight (32)
	White balance (53)
	WIDE SELECT (55)
	SteadyShot off (56)
	Flexible spot meter (53)/ Exposure (53)

DATA CODE while recording

The recording data (date/time or various settings in effect when recording) is recorded automatically on the disc. They are not displayed while recording. However, you can check them as [DATA CODE] during playback (p.61).

Remote Commander

Remove the insulation sheet before using the Remote Commander.



1 DATA CODE (p. 61)

2 PHOTO (p. 26, 30)

When you press this button, the on screen image will be recorded as a still image.

3 SCAN/SLOW (p. 27, 31)

4 ◀▶ (Previous/Next) (p. 27, 31)

5 PLAY (p. 27, 31)

6 STOP (p. 27, 31)

7 DISPLAY (p. 21)

8 Transmitter

9 START/STOP (p. 26, 30)

10 Power zoom (p. 32, 33)

11 PAUSE (p. 27, 31)

12 VISUAL INDEX (p. 27, 31)

Displays the VISUAL INDEX screen when you press this while playing back.

13 ◀/▶/▲/▼/ ENTER

When you press any button, the orange frame appears on the LCD screen. Select a desired button or an item with ◀/▶/▲/▼, then press ENTER to execute.

When no commands have been sent from the Remote Commander in a certain period, the orange frame disappears. When you press any of ◀/▶/▲/▼, or ENTER again, the frame appears at the position where it was displayed last.

- Point the Remote Commander towards the remote sensor to operate your camcorder (p. 33).
- To change the battery, see page 104.

Making the disc compatible with DVD players or DVD drives (Finalizing)

Finalizing allows the recorded disc to be played back on other DVD players (DVD player/DVD recorder, etc.) or the DVD drive on your computer. The finalizing procedure differs depending on the disc type.

- **Playback compatibility is not guaranteed with all players.**



Finalizing is required.

The disc cannot be overwritten once you finalize it even when there is space to record.



Finalizing is required.

VIDEO mode

The disc can be overwritten on your camcorder if you unfinalize it (p. 46), then have to finalize it again to play it back on other DVD players.



Finalizing is required.

Once you finalize the disc, you can play it back on DVD players that support the VR mode.

VR mode

Unfinalizing is not necessary to record additional materials on the disc. Likewise, you do not need to finalize it again after additional recording.



You can play back the disc on DVD players without finalizing it. However, you need to finalize the disc in the following cases:

- when you want to create a DVD menu (p. 41).
- when you want to create a Photomovie (p. 42).
- when you want to play back images on a DVD drive of a computer.
- when recording time is the following:
 - HQ mode: less than 5 minutes
 - SP mode: less than 8 minutes
 - LP mode: less than 15 minutes

If a DVD menu/Photomovie has been created in finalizing, a conformation dialog appears when you try to record additional material. Since the DVD menu/Photomovie is deleted by additional recording, you have to finalize the disc again to create a new DVD menu/Photomovie on it.

Steps for finalizing

Follow the steps below.

- It takes from a minute to a few hours for finalizing. The shorter the amount of material recorded on the disc, the longer it takes for finalizing.
- Use an AC Adaptor as the power source to prevent your camcorder from running out of power during finalizing.
- When you finalize a double-sided disc, you must finalize each side of the disc.

Step 1: Preparing for finalizing (p. 41)

Step 2: Customizing a DVD menu* (p. 41)

If you have set the DVD menu setting, you can create a menu screen to view the thumbnails as a list when the disc is played back on DVD devices.

Step 3: Customizing a Photomovie* (p. 42)

If you have set the Photomovie setting, you can create a Photomovie to view still images on other DVD devices.

Step 4: Changing the disc title (p. 42)

You can make a title on each disc. As the default, the date when the disc was first used is used as a disc title.

Step 5: Finalizing a disc (p. 43)

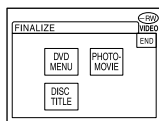
* You cannot do this using a DVD-RW (VR mode).

Step 1: Preparing for finalizing

- 1 Place your camcorder in a stable position. Connect the AC Adaptor to the DC IN jack on your camcorder.
- 2 Turn on the power by sliding the POWER switch.

3 Insert the disc to be finalized.

- 4 Touch [P-MENU] → [FINALIZE] → [SET].



Step 2: Customizing a DVD menu

What is a DVD menu?

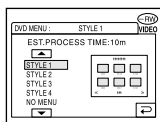
A DVD menu is a menu screen that allows you to display the index to check the contents of the disc or to select desired scenes easily. When you create the DVD menu on your camcorder, the first scenes of each movie are displayed with date as thumbnails.

- You cannot create a DVD menu using a DVD-RW (VR mode).

Making the disc compatible with DVD players or DVD drives (Finalizing) (continued)

1 Touch [DVD MENU].

2 Select the desired one from 4 types with  / .



Select [NO MENU] if you do not create a DVD menu.

3 Touch .

Step 3: Customizing a Photomovie

What is a Photomovie ?

A Photomovie involves converting still images in JPEG format to movies in MPEG format to play them back on other DVD players or on your computer. The original still image remains in the JPEG format on the disc.

Converted still images are played back in sequence like a slide show. The resolution (pixels) of the converted Photomovie, however, is lower than that of the original still images.

- It may take more time for finalizing when you create a Photomovie, since the more still images recorded on the disc, the more time it takes to create a Photomovie.
- You can view still images in the JPEG format using the DVD drive on your computer without creating a Photomovie (p. 44).
- You cannot create a Photomovie on a DVD-RW (VR mode) in this step. Customize it on the [EDIT] screen (p. 70).

1 Touch [PHOTOMOVIE].

2 Touch [YES].


Select [NO] if you do not create a Photomovie.

3 Touch .

Step 4: Changing the disc title

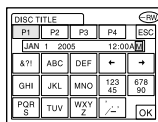
Skip to “Step 5: Finalizing a disc” (p.43) if you do not change the disc title.


1 Touch [DISC TITLE].


2 Delete unnecessary characters by touching .


The yellow cursor moves and characters are deleted from the end.

3 Select the type of a character, then touch the desired character.



To erase a character: Touch .

To insert a space: Touch .

4 Touch  as you register a character to move to the next entry point.

- Up to 20 characters can be registered.

5 When you have finished entering characters, touch [OK].

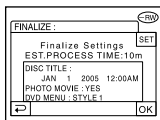
The disc title changes to the one you entered.

6 Touch [END].

- When the disc has a title already set by other devices, the 21st and subsequent characters are deleted by this operation.

Step 5: Finalizing a disc

1 Confirm the settings you made in steps from 2 to 4 of the “steps for finalizing” on the LCD screen.



2 Touch [OK].

3 Touch [YES] → [YES].

Finalizing starts.

- Do not apply shock or vibration to your camcorder, and do not disconnect the AC Adaptor during finalizing.

When you need to disconnect the AC Adaptor, make sure that the power of your camcorder is set to off and disconnect the AC Adaptor after the CHG (charge) lamp goes off. Finalizing restarts when you connect the AC Adaptor and turn on your camcorder again.

You cannot remove the disc until the finalizing operation is completed.

4 Touch [OK], when [Completed] appears.

When using a DVD-R/DVD-RW (VIDEO mode)/DVD+RW, the flashes after finalizing is completed when the POWER switch is set to (Movie) or (Still). Remove the disc from your camcorder.

- When you make the settings to enable a creation of a DVD menu on DVD-R/DVD-RW (VIDEO mode)/DVD+RW, and finalize the disc, the DVD menu appears for a few seconds while finalizing the disc.
- You cannot view a Photomovie with the DVD-R/DVD-RW (VIDEO mode) on your camcorder.
- After finalizing a disc, the disc indicator and the recording format are displayed as shown below:

DVD-R	
DVD-RW (VIDEO mode)	
DVD-RW (VR mode)	
DVD+RW	

Playing back a disc on DVD players, etc.

- Do not use the 8cm CD adaptor with an 8cm DVD as it may cause a malfunction.
- Make sure that a vertically installed DVD device is placed in the position where a disc can be placed horizontally.

1 Insert a disc into the DVD devices.

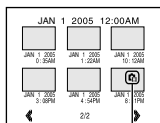
2 Play back the disc.

The playback procedure varies depending on the DVD device. For details, refer to the instruction manual supplied with your DVD device.

If you have created a DVD menu (DVD-R/DVD-RW:VIDEO mode/DVD+RW)

You can select the desired scene in the menu.

A Photomovie is listed after all the movies in the menu.



Photomovie

- Discs may not be played back, playback may be interrupted, or some functions may be disabled on some DVD devices.
- Still images are played back as a Photomovie swapping images in every 3 seconds.

Playing back a disc on a computer with a DVD drive installed

- Do not use the 8cm CD adaptor with an 8cm DVD as it may cause a malfunction.
- Even when you are using a DVD+RW, you must finalize the disc. Otherwise, it may cause a malfunction.

Playing back movies

Use a DVD drive that supports 8cm discs, and a DVD playback application must have been installed on your computer.

1 Insert the finalized disc into the DVD drive of your computer.

2 Play back the disc using a DVD playback application.

- The disc may not be played back on some computers. For details, refer to the instruction manuals of your computer.
- You cannot play back or edit movies that have been copied from the disc to the hard disk of your computer. For details on how to import movies, refer to the "First Step Guide" supplied with the CD-ROM.

Playing back still images

Still images stored on the disc are displayed in the JPEG format. Note that erasing or changing the original data may occur accidentally in this operation since you use the original data on the disc.

1 Insert the finalized disc into the DVD drive of your computer.

2 Click [Start] → [My Computer].

Or, double-click the [My Computer] icon on the desktop.

3 Right-click the DVD drive with the disc inserted, then click [Open].

4 Double-click [DCIM] → [100MSDCF].

5 Double-click the file to be displayed.

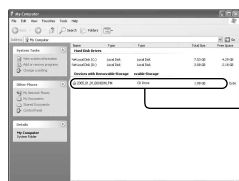
The selected still image appears on the screen.

The date the disc was first used is recorded on the volume label of the disc.

<e.g.>

When the disc was first used at 6:00 pm on January 1st 2005:

2005_01_01_06H00M_PM



Volume label

Images are stored in the following folders on the disc.

■ Movies

DVD-R/DVD-RW(VIDEO mode)/DVD+RW:
VIDEO_TS folder

DVD-RW (VR mode):
DVD_RTAV folder

■ Still images

DCIM\100MSDCF folder

<e.g.>

The folder for data on DVD-Rs/DVD-RWs (VIDEO mode)/DVD+RWs

When using Windows XP:



Recording additional scenes after finalizing

You can record additional material on the finalized DVD-RWs (VIDEO mode)/DVD+RWs by following the steps below if there is space to record on the disc. When using the finalized DVD-RW (VR mode) disc, you can record additional material on the disc without any additional steps.

- Use an AC Adaptor as power source to prevent your camcorder from running out of power during operation.
- Do not apply shock or vibration to your camcorder, and do not disconnect the AC Adaptor during operation.
- A DVD menu and a Photomovie created during finalizing are deleted.
- When you use a double-sided disc, following procedures are required on each side.

When using a DVD-RW (VIDEO mode) disc (Unfinalizing)

1 Connect the AC Adaptor to the DC IN jack on your camcorder, then connect the power cord to the wall outlet.

2 Turn on the power by sliding the POWER switch.

3 Insert the finalized disc into your camcorder.

4 Touch **[P-MENU]** → **[SETUP]**.

5 Touch **[DISC SET]** → **[UNFINALIZE]**.

6 Touch **[YES]** → **[YES]**, then touch **[OK]** when **[Completed.]** appears.

When using a DVD+RW

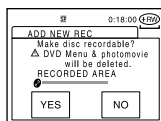
If you have created a Photomovie or a DVD menu in finalizing (p. 40), the following steps are required.

1 Connect the AC Adaptor to the DC IN jack on your camcorder, then connect the power cord to the wall outlet.

2 Slide the POWER switch to light up the **[MOVIE]** (Movie) or **[STILL]** (Still) lamp.

3 Insert the finalized disc into your camcorder.

A confirmation dialog asking if you record additional scenes appears.



4 Touch **[YES]** → **[YES]**.

[Completed.] appears, then the screen returns to the recording screen.

Deleting all of the scenes on the disc (Formatting)

Formatting makes the recorded disc new and reusable by deleting all the data recorded on the disc. The recording capacity of the disc is recovered by formatting it.

The procedure for formatting differs depending on the disc type.



You cannot format this kind of disc. Use a new disc.



You can format this kind of disc and reuse it.

VIDEO mode

If you have finalized the disc, it is unfinalized.



You can format this kind of disc and reuse it.

VR mode

If you have finalized the disc, the previous records on finalizing remain on the disc.



You can format this kind of disc and reuse it.

If you have finalized the disc, the previous records on finalizing remain on the disc.

- Use an AC Adaptor as power source to prevent your camcorder from running out of power during formatting.
- Do not apply shock or vibration to your camcorder, and do not disconnect the AC Adaptor during formatting.
- When you use a double-sided disc, formatting is required on each side.

1 Connect the AC Adaptor to the DC IN jack on your camcorder, then connect the power cord to the wall outlet.

2 Turn on the power by sliding the POWER switch.

3 Insert the disc to be formatted into your camcorder.

4 Touch **[P-MENU]** → **[FORMAT]**.

■ **DVD-RW**

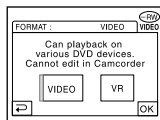
Select the recording format, then format the disc. Proceed to step **5**.

■ **DVD+RW**

The **[FORMAT]** screen appears. Proceed to step **6**.

5 Select the recording format for a DVD-RW, then touch **[OK]**.

For details on a recording format, see page 13.

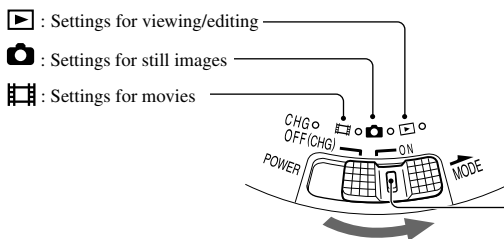


6 Touch **[YES]** → **[YES]**, then touch **[OK]** when **[Completed.]** appears.

- During the Easy Handycam operation (p. 25), the screen in step **5** does not appear even if you insert a DVD-RW into your camcorder. Proceed to step **6**.
- You cannot format a disc that has been protected on other equipment. Cancel the protection with the original equipment, and then format it.

Using the Setup items

1 Slide the POWER switch to light up the respective lamp.



Slide the POWER switch while pressing the green button in the center if the POWER switch is in the OFF (CHG) position.

2 Touch the LCD screen to select the setup item.

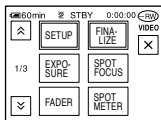
Unavailable items will be grayed out.

■ To use the short-cuts of Personal Menu

On Personal Menu, short-cuts for frequently used setup items are added.

- You can customize Personal Menu as you like (p. 64).

① Touch [P-MENU].



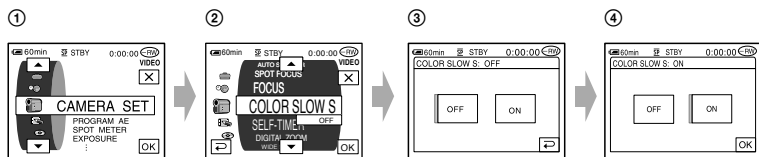
② Touch the desired setup item.

If the desired setup item is not displayed on the screen, touch [▲] / [▼] until it is displayed.

③ Select the desired setting, then touch [OK].

■ To use setup items

You can customize setup items that are not added to Personal Menu.



① Touch [P-MENU] → [SETUP].

② Select the desired setup item.

Touch [▲] / [▼] to select the item, then touch [OK].

③ Select the desired item.

Touch [▲] / [▼] to select the item, then touch [OK].

- You can also touch the item directly to select it.

④ Customize the item.

After finishing the settings, touch [OK] → [X] (close) to hide the [SETUP] screen.

If you decide not to change the setting, touch [↶] to return to the previous screen.

-
- During Easy Handycam operation (p. 25), available setup items are displayed when you touch [SETUP] on the LCD screen.

Setup items

Position of lamp:



Movie



Still



Play/Edit

Easy
Handycam

CAMERA SET (p. 52)

PROGRAM AE	●	●	—	AUTO
SPOT METER	●	●	—	AUTO
EXPOSURE	●	●	—	AUTO
WHITE BAL.	●	●	—	AUTO
AUTO SHUTTER	●	—	—	ON
SPOT FOCUS	●	●	—	AUTO
FOCUS	●	●	—	AUTO
COLOR SLOW S	●	—	—	OFF
SELF-TIMER	●	●	—	OFF
DIGITAL ZOOM	●	—	—	OFF
WIDE SELECT	●	—	—	4:3
STEADYSHOT	●	—	—	ON

STILL SET (p. 56)

QUALITY	—	●	—	FINE
FILE NO.	—	●	—	—*

PICT.APPLI. (p. 57)

FADER	●	—	—	OFF
D. EFFECT	●	—	—	OFF
PICT. EFFECT	●	—	—	OFF
REC CTRL	—	—	●	—
SLIDE SHOW	—	—	●	—
DEMO MODE	●	—	—	ON

DISC SET (p. 59)

FORMAT	●	●	●	●
FINALIZE	●	●	●	●
UNFINALIZE	●	●	●	—
DISC TITLE	●	●	●	—

Available setup items (●) vary depending on the position of a lamp.

*The setting value before entering Easy Handycam operation will be retained.

Position of lamp:

 Movie	 Still	 Play/Edit	Easy Handycam
---	---	---	---------------



STANDARD SET (p. 59)

REC MODE	●	—	—	SP
VOLUME	—	—	●	●*
MULTI-SOUND	—	—	●	STEREO
MICREF LEVEL	●	—	—	NORMAL
LCD SET	●	●	●	—/ NORMAL/ —/*
USB SPEED	—	—	●	—*
DATA CODE	—	—	●	—
DISC REMAIN	●	●	—	AUTO
REMOTE CTRL	●	●	●	ON
REC LAMP	●	●	—	ON
BEEP	●	●	●	●*
DISP OUTPUT	●	●	●	LCD PANEL
SETUP ROTATE	●	●	●	—
A.SHUT OFF	●	●	●	5min
CALIBRATION	—	—	●	—



TIME/LANGU. (p. 63)

CLOCK SET	●	●	●	●*
AREA SET	●	●	●	—*
DST SET/SUMMERTIME	●	●	●	—*
LANGUAGE	●	●	●	●*

CAMERA SET

Settings to adjust your camcorder to the recording conditions (EXPOSURE/WHITE BAL./STEADYSHOT, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 48 for details on selecting setup items.

PROGRAM AE

You can record pictures effectively in various situations with the PROGRAM AE function.

► AUTO

Select to automatically record pictures effectively without the [PROGRAM AE] function.

SPOTLIGHT*()



Select to prevent people's faces from appearing excessively white when subjects are lit by strong light.

PORTRAIT (Soft portrait) ()



Select to bring out the subject such as people or flowers while creating a soft background.

SPORTS*(Sports lesson) ()



Select to minimize shake when shooting fast moving subjects.

BEACH&SKI*()



Select to prevent people's faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

SUNSET&MOON()**



Select to maintain the atmosphere of situations such as sunsets, general night views or fireworks.

LANDSCAPE()**

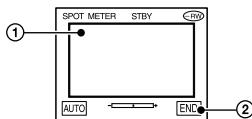


Select to shoot distant subjects clearly. This setting also prevents your camcorder from focusing on glass or metal mesh in windows that comes in between the camcorder and the subject.

- Items with 1 asterisk (*) can be adjusted so as not to focus on subjects only a short distance away. Items with 2 asterisks (**) can be adjusted to focus on subjects farther away.
- The setting returns to [AUTO] when you have the power source disconnected from your camcorder for more than 5 minutes.

SPOT METER (Flexible spot meter)

You can adjust and fix the exposure to the subject, so that it is recorded in suitable brightness even when there is strong contrast between the subject and the background, such as subjects in the spotlight on stage.



- ① Touch the point where you want to fix and adjust the exposure on the screen.

↔ appears.

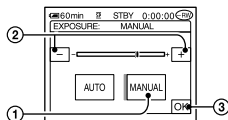
- ② Touch [END].

To return the setting to automatic exposure, touch [AUTO]→[END].

- If you set [SPOT METER], [EXPOSURE] is automatically set to [MANUAL].
- The setting returns to [AUTO] when you have the power source disconnected from your camcorder for more than 5 minutes.

EXPOSURE

You can fix the brightness of a picture manually. When recording indoors on a clear day, for instance, you can avoid backlight shadows on people next to the window by fixing the exposure to that of the wall side of the room.



- ① Touch [MANUAL].

↔ appears.

- ② Adjust the exposure by touching

[-] / [+].

- ③ Touch [OK].

To return the setting to automatic exposure, touch [AUTO]→[OK].

- The setting returns to [AUTO] when you have the power source disconnected from your camcorder for more than 5 minutes.

WHITE BAL. (White balance)

You can adjust the color balance to the brightness of the recording environment.

► AUTO

The white balance is adjusted automatically.

OUTDOOR (☀)

The white balance is set to the brightness of the outdoor environment or daylight under fluorescent lamps.

INDOOR (💡)

The white balance is set to the brightness of warm white fluorescent lamps.

ONE PUSH (📷)

The white balance will be adjusted according to the ambient light.

- ① Touch [ONE PUSH].
- ② Frame a white object such as a piece of paper, to fill the screen under the same lighting conditions as you will shoot the subject.
- ③ Touch [📷].

📷 flashes quickly. When the white balance has been adjusted and stored in the memory, the indicator stops flashing.

- Do not shake your camcorder while 📷 is flashing quickly.
- 📷 flashes slowly if white balance could not be set.
- If 📷 keeps flashing even after you have touched [OK], set [WHITE BAL.] to [AUTO].

- When you have changed the battery pack while [AUTO] is selected, or you bring your camcorder outdoors from inside the house while using fixed exposure, select [AUTO] and aim your camcorder at a nearby white object for about 10 seconds for better color balance adjustment.

CAMERA SET (continued)

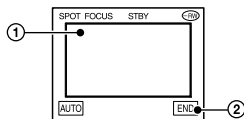
- Redo the [ONE PUSH] procedure if you change the [PROGRAM AE] settings, or bring your camcorder outdoors from inside the house, or vice versa when [ONE PUSH] is set to on.
- Set [WHITE BAL.] to [AUTO] or [ONE PUSH] under white or cool white fluorescent lamps.
- The setting returns to [AUTO] when you have the power source disconnected from your camcorder for more than 5 minutes.

AUTO SHUTTER

Automatically activates the electronic shutter to adjust the shutter speed when recording in bright conditions if you set it to [ON] (the default setting).

SPOT FOCUS

You can select and adjust the focal point to aim it at a subject not located in the center of the screen.



- ① Touch the subject on the screen.
☞ appears.

- ② Touch [END].

To adjust the focus automatically, touch [AUTO]→[END].

- If you set [SPOT FOCUS], [FOCUS] is automatically set to [MANUAL].
- The setting returns to [AUTO] when you have the power source disconnected from your camcorder for more than 5 minutes.





FOCUS

You can adjust the focus manually. Select this when you want to focus on a certain subject intentionally.



- ① Touch [MANUAL].

☞ appears.

- ② Touch  (focusing on close subjects)/  (focusing on distant subjects) to sharpen the focus.  appears when the focus cannot be adjusted any closer, and  appears when the focus cannot be adjusted farther away.


- ③ Touch [OK].

To adjust the focus automatically, touch [AUTO]→[OK] in step ②.

- It is easier to focus on the subject by moving the power zoom lever towards T (telephoto) to adjust the focus, then towards W (wide angle) to adjust the zoom for recording. When you want to record a subject at close range, move the power zoom lever to W (wide angle), then adjust the focus.
- The minimum distance required between your camcorder and the subject to get a sharp focus is about 1 cm (about 1/2 inch) for wide angle and about 80 cm (about 2 5/8 feet) for telephoto.
- The setting returns to [AUTO] when you have the power source disconnected from your camcorder for more than 5 minutes.

COLOR SLOW S (Color Slow Shutter)

When you set [COLOR SLOW S] to [ON], you can record an image brighter in color even in dark places.


 and [COLOR SLOW SHUTTER] flash on the screen.

To cancel [COLOR SLOW S], touch [OFF].

- Adjust the focus manually ([FOCUS], p. 54) when it is hard to focus automatically.
- The shutter speed of your camcorder changes depending on the brightness. The motion of the picture may slow down at this time.

SELF-TIMER

The self-timer starts recording after about 10 seconds.

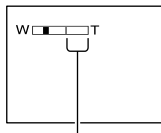
- ① Touch **[P-MENU]** → **[SETUP]** → **[CAMERA SET]** → **[SELF-TIMER]** → **[ON]** → **[OK]**.
 appears.
- ② Press **REC START/STOP (PHOTO)** to record movies, or still images. To cancel the count down, touch **[RESET]**.

To cancel the self-timer, select **[OFF]** in step ①.

- You can also use the self-timer with the Remote Commander (p.37).

DIGITAL ZOOM

You can select the maximum zoom level in case you want to zoom greater than 10 ×, optical zoom magnification.
 Note that the image quality decreases when you use the digital zoom.



The right side of the bar shows the digital zooming factor. The zooming zone appears when you select the zooming level.

► OFF

Up to 10 × zoom is performed optically.

20 ×

Up to 10 × zoom is performed optically, and after that, up to 20 × zoom is performed digitally.

120 ×

Up to 10 × zoom is performed optically, and after that, up to 120 × zoom is performed digitally.

WIDE SELECT

You can record a picture in a ratio suitable for the screen on which it will be displayed.

► 4:3

Standard setting (to record pictures to be played back on a 4:3 TV).

16:9 WIDE

Records pictures to be played back on a 16:9 wide TV in full screen mode.

When viewed on the LCD screen with **[16:9WIDE]** selected.



When viewed on a 16:9 wide screen TV^{*1}



When viewed on a standard TV (4:3 screen)^{*2}



^{*1} When 16:9 wide TV switches to full screen mode, the picture appears on the TV screen at the right ratio.

^{*2} When you play back in TV (4:3 screen), the picture may be compressed. When you play back in the wide mode, the picture appears as you see it on the LCD screen.

- You cannot change the aspect ratio in the following cases:

- while recording movie.
- when **[D.EFFECT]** is set to **[OLD MOVIE]** (p.58).

- When recording on a DVD-R/DVD-RW (VIDEO mode)/DVD+RW, the available recording time may get shorter in the following conditions:

- when you record both **[4:3]** and **[16:9WIDE]** picture.
- when you change the **[REC MODE]** in **[4:3]** (p. 59).

Images played back on a TV connected to a DVD device

The way you see images on the TV screen may be different depending on the device. For details, refer to the instruction manuals supplied with the device you are using.

- When you play back pictures recorded in [16:9WIDE] on a DVD+RW with a DVD player or a DVD recorder, they may appear to be compressed in the lengthwise direction.
- When you connect your camcorder to a TV compatible with the ID-1/ID-2 system, or via an S VIDEO jack, and play back a disc, the TV switches to full mode automatically. Refer also to the instruction manuals supplied with your TV (p. 38).

STEADYSHOT

You can record pictures using [STEADYSHOT] (the default setting is [ON]). Set [STEADYSHOT] to [OFF] (👉) when using a tripod (optional).



STILL SET

Settings for still images (QUALITY/FILE NO.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 48 for details on selecting setup items.

QUALITY

► FINE (FINE)

Records still images at the fine image quality level.

STANDARD (STD)

Records still images at the standard image quality level.

The size of still images

[FINE] : approx. 150KB.

[STANDARD] : approx. 60KB.

Number of still images recordable on a disc (approx.)

DVD-R	5100
	8100
DVD-RW (VIDEO mode)	5400
	8600
DVD-RW (VR mode)	5400
	8600
DVD+RW	2950
	3800

Top: [FINE]

Bottom: [STANDARD]

- Still images are recorded in 640×480 on your camcorder.
- The table shows approximate recordable number and the numbers apply to a single-sided disc, and they will be doubled for a double-sided disc.

FILE NO.

► SERIES

Assigns numbers to files in sequence even if the disc is changed.

RESET

Resets the file numbering to 0001 each time the disc is changed.



PICT.APPLI.

Special effects on pictures or additional functions on recording/playback

(D.EFFECT/PICT.EFFECT/SLIDE SHOW, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 48 for details on selecting setup items.

FADER

You can add the following effects to currently recording pictures.

- ① Select the desired effect, then touch [OK].
When you select [OVERLAP] or [WIPE], the image is stored as a still image. (While storing the image, the screen turns to blue.)
- ② Press REC START/STOP (PHOTO).
The fader indicator stops flashing and disappears when the fade is completed.

To cancel the operation, touch [OFF] in step ①.



WHITE FADER



BLACK FADER




OVERLAP (fade in only)









WIPE (fade in only)



D. EFFECT (Digital effect)

You can add digital effects to your recordings.  appears.

- ① Touch the desired effect.
- ② When you select [LUMI. KEY], adjust the effect with  / , then touch .
The image displayed when you touch  is saved as a still image.

- ③ Touch .
 appears.

To cancel [D. EFFECT], touch [OFF] in step ①.

LUMI. KEY (luminance key)


Replaces a brighter area in a previously recorded still image (e.g. a person) with a movie.



OLD MOVIE

Adds an old movie effect to pictures.

PICT. EFFECT (Picture effect)

You can add special effects to a picture during recording.  appears.

► OFF

Does not use [PICT. EFFECT] setting.

SEPIA

Picture appears in sepia.

B&W

Picture appears in black and white.

PASTEL



Picture appears like a pale pastel drawing.

MOSAIC



Picture appears mosaic-patterned.




REC CTRL

See page 74.


SLIDE SHOW


Plays back all the images stored on a disc in sequence (slide show).

Still images start to change to the next one in sequence when you touch [START]. To cancel [SLIDE SHOW], touch [END]. To pause, touch [PAUSE]. Touch [START] again to restart the slide show.

- You can select the first picture for the slide show with  /  before touching [START].
- You can repeat the slide show by touching . The default setting is set to [ON] (repeat slide show).

DEMO MODE

The default setting is [ON] so that you can view the demonstration in about 10 minutes, after you have set the POWER switch to  (Movie) without inserting a disc.

- The demonstration will be suspended in situations such as those described below.
 - When you touch the screen during the demonstration. (The demonstration starts again in about 10 minutes.)
 - When you slide the disc cover OPEN switch.
 - When the POWER switch is set to other than  (Movie).



DISC SET

Settings for discs
(FORMAT/FINALIZE/UNFINALIZE, etc.)

See page 48 for details on selecting setup items.

FORMAT

See page 47.

FINALIZE

See page 40.

UNFINALIZE

See page 46.

DISC TITLE

You can make a title on each disc. As the default, the date when the disc was first used is used as a disc title.

- ① Touch **P-MENU** → [SETUP] → DISC SET → [DISC TITLE].
- ② Enter the disc title.
Follow steps **2** to **5** in “Step 4: Changing the disc title” of the “Making the disc compatible with DVD players or DVD drives (Finalizing)” (p. 42).

To cancel editing the title, touch [ESC] in step ②.



STANDARD SET

Settings while recording on a disc or other basic settings
(REC MODE/LCD SET/USB SPEED, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the item is selected.

See page 48 for details on selecting setup items.

REC MODE (Recording mode)

You can select an image quality of the movie from 3 levels.

HQ (HQ)

Record in high quality mode
(approx. recordable time is up to 20 min).

► SP (SP)

Records in standard quality mode
(approx. recordable time is up to 30 min).

LP (LP)

Increases the recording time (Long Play)
(approx. recordable time is up to 60 min).

- **The time in parenthesis indicates the approximate recordable time when recording only a movie on a single-sided disc. When recording on a double-sided disc, this value is applied for both sides.**
- **Your camcorder has a VBR encoding system (p.12) so when you record an object that moves fast, the time available for recording may shorten.**
- If you record in the LP mode, the quality of scenes may be degraded, or scenes with quick movements may appear with a block noise when you play back the disc.

VOLUME

See page 31.

MULTI-SOUND

You can select to play back audio recorded using other devices whether with dual sound or with stereo sound.

► STEREO

Plays back with main and sub sound (or stereo sound).

1

Plays back with main sound or the left channel sound.

2

Plays back with sub sound or the right channel sound.

- The setting returns to [STEREO] when you have the power source disconnected from your camcorder for more than 5 minutes.

MICREF LEVEL

You can select the microphone level for recording sound.

Select [LOW] when you want to record exciting and powerful sound in a concert hall, etc.

► NORMAL

Records various surround sounds, converting them into the same level.

LOW

Records surround sound faithfully.

This setting is not suitable for recording conversations.

- The setting returns to [NORMAL] when you have the power source disconnected from your camcorder for more than 5 minutes.

LCD SET

The recorded picture will not be affected even when you change the setting.

■ LCD BRIGHT

You can adjust the brightness of the LCD screen.

- ① Adjust the brightness with / .
- ② Touch .

■ LCD BL LEVEL

You can adjust the brightness of the LCD screen's backlight.

► NORMAL

Standard brightness.

BRIGHT

Brightens the LCD screen.

- When you use an AC Adaptor as the power source, [BRIGHT] is automatically selected for the setting.
- When you select [BRIGHT], battery life is slightly reduced during recording.

■ LCD COLOR

You can adjust the color on the LCD screen with / .



Low intensity

High intensity

■ WIDE DISPLAY

You can select how a 16:9 aspect ratio picture appears in the LCD screen.

► LETTER BOX

Normal setting (standard type of display)

SQUEZE (Squeeze)

Expands the picture vertically when black bands appear at the top and bottom of the screen in 16:9 aspect ratio.

- When you set the POWER switch to (Still), [WIDE DISPLAY] does not appear.

USB SPEED

You can select data transfer speed used to transfer data to your computer.

► AUTO

Sends data by switching automatically between the Hi-Speed USB (USB2.0) and the speed corresponding to USB1.1 (full speed transfer).

FULL SPEED

Sends data corresponding to USB1.1 (full speed transfer).

DATA CODE

You can check the display information recorded automatically (data code) during playback.

► OFF

Data code is not displayed.

CAMERA DATA

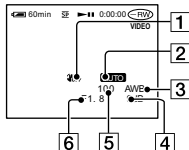
Displays the camera setting data of recorded images.

DATE/TIME

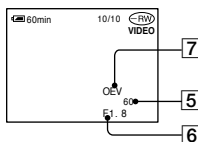
Displays the date and time of recorded images.

CAMERA DATA

Movie

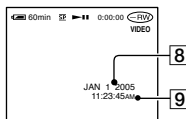


Still image



- 1 SteadyShot off
- 2 Exposure
- 3 White balance
- 4 Gain
- 5 Shutter speed
- 6 Aperture value
- 7 Exposure value

DATE/TIME



- 8 Date
- 9 Time

- The data code is displayed on the TV screen if you connect your camcorder to a TV.
- The indicator toggles through the following sequences as you press DATA CODE on the Remote Commander: DATE/TIME → CAMERA DATA → OFF (no indicator).
- Depending on the disc condition, bars [---:---] appear.
- The setting returns to [OFF] when you have the power source disconnected from your camcorder for more than 5 minutes.

DISC REMAIN

► AUTO

Displays the remaining disc indicator for about 8 seconds in situations such as those described below.

- When you check the disc remaining by sliding the POWER switch to (Movie) or (Still).
- When you set the POWER switch to (Movie) or (Still), then press DISP/BATT INFO to switch the indicator from off to on.
- When the remaining capacity of the disc is less than 5 minutes for (Movie) or 30 images for (Still).
- When you start recording from the line input.

ON

Always displays the remaining disc indicator.

REMOTE CTRL (Remote control)

The default setting is [ON] so that you can use the Remote Commander (p. 37).

- Set to [OFF] to prevent your camcorder from responding to a command sent by other equipment's remote control.
- The setting returns to [ON] when you have the power source disconnected from your camcorder for more than 5 minutes.

REC LAMP (Recording lamp)

The camera recording lamp will not light up during recording when you set this to [OFF]. (The default setting is [ON].)

BEEP

► ON

A melody sounds when you start/stop recording, or operate the touch panel.

OFF

Cancels the melody.

DISP OUTPUT

► LCD PANEL


Shows displays such as the counter on the LCD screen.

V-OUT/PANEL


Shows the display also on the TV screen.

SETUP ROTATE

► NORMAL

Scrolls the setup items downwards by touching .

OPPOSITE

Scrolls the setup items upwards by touching .

A.SHUT OFF (Auto shut off)

► 5 min

The camcorder is automatically turned off when you do not operate your camcorder for more than approximately 5 minutes.

NEVER

The camcorder is not automatically turned off.

- When you use the AC Adaptor as the power source, [A.SHUT OFF] is automatically set to [NEVER].

CALIBRATION

See page 102.



TIME/LANGU.

(CLOCK SET/AREA SET/LANGUAGE, etc.)

The default settings are marked with ►.
The indicators in parentheses appear when the item is selected.

See page 48 for details on selecting setup items.

CLOCK SET

See page 22.

AREA SET

Set your local area using ▲/▼ when using your camcorder overseas.

Refer to the World time difference on page 98.

DST SET/SUMMERTIME

► OFF

Does not set the summertime (daylight saving time).

ON

Sets the summertime (daylight saving time).

You can adjust a time difference in the [AREA SET] and the [DST SET]/[SUMMERTIME] setting without stopping the clock.

LANGUAGE

You can select the language to be used on the LCD screen.

You can select from English, Simplified English, Canadian-French, Latin American Spanish, Brazilian-Portuguese, or Korean.

- Traditional Chinese is also available from setup items for customers who bought this product in Asia, Middle East, Canada, Latin America or Japan (as an Overseas Model).
- Your camcorder offers [ENG[SIMP]] (simplified English) for when you cannot find your native tongue among the options.

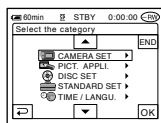
Customizing Personal Menu

You can add desired setup items to Personal Menu, and customize Personal Menu settings for each POWER switch position. This is convenient if you add frequently used setup items to Personal Menu.

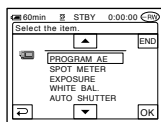
Adding a setup item

You can add up to 27 setup items for each POWER switch position. Delete a less important setup item, if you want to add more.

- 1 Touch **[P-MENU]** → **[P-MENU SET UP]** → **[ADD]**.



- 2 Touch **[▲]** / **[▼]** to select a setup category, then touch **[OK]**.



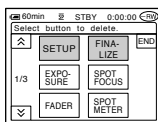
- 3 Touch **[▲]** / **[▼]** to select a setup item, then touch **[OK]** → **[YES]** → **[X]**.

The setup item is added to the end of list.

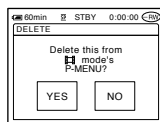
Deleting a setup item

- 1 Touch **[P-MENU]** → **[P-MENU SET UP]** → **[DELETE]**.

If the desired setup item is not displayed, touch **[▲]** / **[▼]**.



- 2 Touch the setup item that you want to delete.



- 3 Touch **[YES]** → **[X]**.

- You cannot delete [SETUP], [FINALIZE] and [P-MENU SET UP].

Arranging the order of setup items displayed on Personal Menu

- 1 Touch **[P-MENU]** → **[P-MENU SET UP]** → **[SORT]**.

If the desired setup item is not displayed, touch **[▲]** / **[▼]**.

- 2 Touch the setup item you want to move.

- 3 Touch **[▲]** / **[▼]** to move the setup item to the desired place.

- 4 Touch **[OK]**.

To sort more items, repeat steps 2 to 4.

- 5 Touch **[END]** → **[X]**.

- You cannot move **[P-MENU SET UP]**.

Initializing the Personal Menu settings (Reset)




Touch **[P-MENU]** → **[P-MENU SET UP]** → **[RESET]** → **[YES]** → **[YES]** → **[X]**.

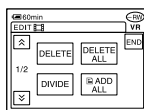
Editing the original data

This function is available only for DVD-RWs (VR mode).

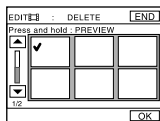
“Original data” refers to the recorded movies and still images data on the disc. Using DVD-RWs recorded in VR mode, you can edit the original images on your camcorder.



Deleting images

- 1 Slide the **POWER** switch repeatedly to light up the  (Play/Edit) lamp.
- 2 Insert the recorded disc into your camcorder.
- 3 Select the  (Movie) tab or the  (Still image) tab that includes the image you want to delete, then touch [EDIT].



- 4 Touch [DELETE].
- 5 Touch the image to be deleted.



The selected scene is marked with . Press and hold the image on the LCD screen to confirm the image. Touch  to return to the previous screen.

- You can select several movies and still images at the same time.

6 Touch [OK] → [YES].



- You cannot recover an image once you delete it.

To delete all movies or still images on the disc at the same time

Touch [DELETE ALL] in step 4.

- If you delete an original movie that is listed in a Playlist (p. 68), it is also deleted from the Playlist.
- Deleting scenes may not provide enough space to record movies or still images additionally.
- To delete all the images on the disc and restore original recording capacity, format the disc (p. 47).

Dividing a movie

- 1 Slide the **POWER** switch repeatedly to light up the  (Play/Edit) lamp.
- 2 Insert the disc with the movies recorded into your camcorder.
- 3 Touch the  (Movie) tab → [EDIT].
- 4 Touch [DIVIDE].

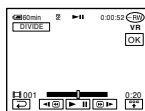
5 Touch the scene to be divided.

The playback of the selected movie starts.

- If the movie is added in the Playlist, dividing the original movie does not affect the movie in the Playlist.

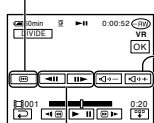
6 Touch at the point at which you want to divide the movie into scenes.

The movie pauses.




When you touch , the operational buttons below appear.



Returns to the beginning of the selected movie.



Adjusts the volume

Adjusts the dividing point with more precision after the dividing point has been selected.

To hide the buttons, touch .

- Play and pause toggle as you press .
- A slight difference may occur from the point where you touch  and the actual dividing point, as your camcorder selects the dividing point based on half-second increments.

7 Touch → [YES].

- Once you divide a movie, you cannot return it to the state it was in before you divided it.

Creating the Playlist

This function is available only for DVD-RWs (VR mode).

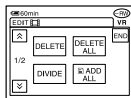
A Playlist is a list showing thumbnails of the still images and movies that you have selected. The original scenes are not changed even though you edit or delete the scenes in the Playlist.

- You can add up to 999 scenes in the Playlist.
- Do not remove the battery pack or the AC Adaptor from your camcorder while editing the Playlist. It may damage the disc.





1 Slide the POWER switch repeatedly to light up the (Play/Edit) lamp.

2 Insert the recorded disc into your camcorder.

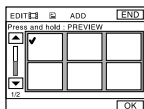
3 Select the (Movie) tab or the (Still image) tab that includes the scene you want to add to the Playlist, then touch [EDIT].





4 Touch [ADD].

Touch  /  to display [ ADD] when [ ADD] is not displayed.


5 Touch the scene to be added to the Playlist.



The selected scene is marked with . Press and hold the image on the LCD screen to confirm the image. Touch  to return to the previous screen.

- You can select several movies and still images at the same time.

6 Touch → [YES].

- When you add still images in a Playlist, they are converted automatically to a movie and added to the Movie tab. A movie converted from still images is shown with . The original still images remain on the disc. The resolution of the converted movie may be lower than that of the original still images.

To add all the movies on the disc at the same time

Touch [ ADD ALL] in step 4.


To add all the still images on the disc in a Playlist

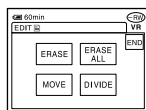
It is recommended that you create a Photomovie (p.70) beforehand, then add it in a Playlist.

Erasing unnecessary scenes from the Playlist

1 Slide the POWER switch repeatedly to light up (Play/Edit) lamp.

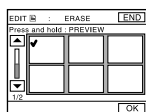
2 Insert the disc with images added in a Playlist.


- 3** Touch the  (Playlist) tab → [EDIT].



- 4** Touch [ERASE].

- 5** Touch the scene to be deleted from the list.



The selected scene is marked with ✓. Press and hold the image on the LCD screen to confirm the image. Touch  to return to the previous screen.

- You can select several movies and still images at the same time.


- 6** Touch [OK] → [YES].

To erase all the scenes at the same time


Touch [ERASE ALL] in step 4 → [YES].

- The original scenes are not changed even though you erase the scenes from the Playlist.

Changing the order within the Playlist

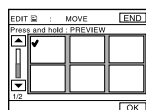
- 1** Slide the POWER switch repeatedly to light up the  (Play/Edit) lamp.


- 2** Insert the disc with movies added into a Playlist.

- 3** Touch the  (Playlist) tab → [EDIT].

- 4** Touch [MOVE].

- 5** Touch the scene to be moved.

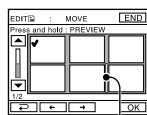


The selected scene is marked with ✓. Press and hold the image on the LCD screen to confirm the image. Touch  to return to the previous screen.

- You can select several movies and still images at the same time.

- 6** Touch [OK].

- 7** Select the designated position with [←]/[→].





Move destination bar

- 8** Touch [OK] → [YES].

- When you have selected multiple scenes, the scenes move following the order appeared in the Playlist.


Dividing a movie within the Playlist

- 1 Slide the **POWER** switch repeatedly to light up the  (Play/Edit) lamp.
- 2 Insert the disc with movies added into a Playlist.
- 3 Touch the  (Playlist) tab → [EDIT].

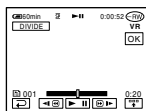
- 4 Touch [DIVIDE].

- 5 Touch the scene to be divided.

The playback of the selected movie starts.



- 6 Touch  at the point at which you want to divide the movie into scenes.

The movie pauses.



Touch to display functional buttons.


See page 67 for details.

- Play and pause toggles as you press .
- A slight difference may occur from the point where you touch  and the actual dividing point, as your camcorder selects the dividing point based on half-second increments.

- 7 Touch [OK] → [YES].

Converting all the still images on a disc to a movie file (Photomovie)


Photomovie converts still images on a disc (JPEG format) to a movie (MPEG format) to play them back on other DVD players or on your computer, and stores them as a Photomovie on the disc. Converted still images are played back in sequence, like a slide show. However, the resolution (pixels) of the converted Photomovie may be lower than that of the original still images. Since Photomovie categorizes still images as a movie, you can add more images in the Playlist.

- 1 Slide the **POWER** switch repeatedly to light up the  (Play/Edit) lamp.

- 2 Insert the disc with the still images recorded into your camcorder.

- 3 Touch the  (Still image) tab → [EDIT] → [PHOTOMOVIE].

- 4 Touch [OK].


All of the still images on the disc are converted to a single movie file, and added to a movie tab. A movie converted from still images is shown with  on the upper right.

- It may take more time to create a Photomovie as more still images are recorded on the disc.
- Still images which are not compatible with your camcorders, such as ones shot using a digital still camera and then copied to a computer can not be converted from still images to a Photomovie.

- The original scenes are not changed even though you divide scenes in the Playlist.

Playing the Playlist

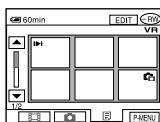
This function is available only for DVD-RWs (VR mode).

1 Slide the POWER switch repeatedly to light up the  (Play/Edit) lamp.

2 Insert the disc on which the Playlist is added into your camcorder.

3 Touch the  (Playlist) tab.

A list of the scenes added in the Playlist appears.

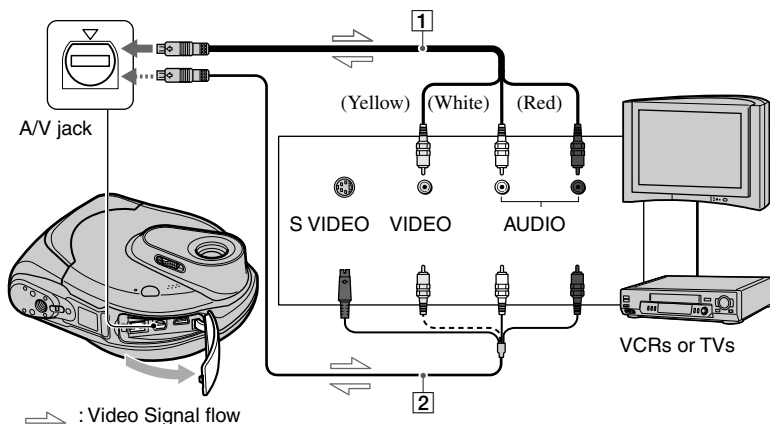


4 Touch the image from which you want to playback.

The screen returns to the VISUAL INDEX screen when the Playlist is played back from the selected scene to the end.

Connecting to a VCR or TV

Connect your camcorder to the wall outlet using the supplied AC Adaptor for this operation (p. 17). Refer also to the instruction manuals supplied with the devices to be connected.



1 A/V connecting cable (supplied)

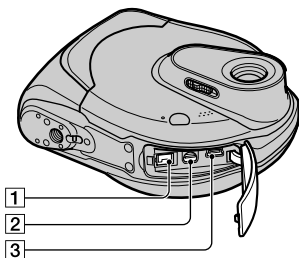
Connect to the input jack of the other device.

2 A/V connecting cable with S VIDEO (optional)

When connecting to another device via the S VIDEO jack, by using an A/V connecting cable with an S VIDEO cable (optional), higher quality pictures can be produced than with an A/V cable connection. Connect the white and red plug (left/right audio) and the S VIDEO plug (S VIDEO channel) of the A/V connecting cable with an S VIDEO cable (optional). The yellow plug connection is not necessary.

- Connect the A/V connecting cable to the output jack of a device you are dubbing a picture from, or to the input jack of another device for dubbing a picture from your camcorder.
- When you are connecting your camcorder to a monaural device, connect the yellow plug of the A/V connecting cable to the video jack, and the red (right channel) or white (left channel) plug to the audio jack on the VCR or the TV.

Jacks to connect external devices



1 DC IN jack (p. 17)

2 A/V (audio/video) jack (p. 72)

3 USB jack (p. 75)

Dubbing to VCR/DVD devices

You can copy pictures played back on your camcorder to other recording devices, such as VCRs or DVD recorders.

After dubbing them to an HDD (hard disc drive) video recorder, you can enjoy images stored on the hard disk of the recorder.

- To hide the screen indicators such as a counter on the screen of the monitor of the device connected with the supplied A/V connecting cable, set [DISP OUTPUT] to [LCD PANEL] (the default setting, p. 62).

1 Connect your camcorder to the VCR using the A/V connecting cable (supplied).

Connect your camcorder to the input jacks of a VCR or a DVD device. See page 72 for details on how to make the proper connections.

2 Insert the recording media into your VCR or DVD recorder.

If your recording device has an input selector, set it to the input mode.

3 Slide the POWER switch repeatedly to light up the (Play/Edit) lamp.

4 Insert the recorded disc into your camcorder.

5 Start the playback on your camcorder, and record it on the recording device.

Refer to the instruction manuals supplied with your recording device for details.

6 When the dubbing is finished, stop your camcorder and the recording device.

- To record the date/time and camera settings data, display them on the screen (p. 61).

Recording images from a TV or VCR/DVD device

You can record pictures or TV programs from a VCR or TV onto a disc using your camcorder.

- You cannot record TV programs which allow you to record once, or have copy control technology.


1 Connect your camcorder to the TV or VCR/DVD device using the A/V connecting cable (supplied).

Connect your camcorder to the output jacks of a TV or VCR/DVD device. See page 72 for details on how to make the proper connections.

2 If you are recording from a VCR/DVD device, insert the cassette or DVD disc into the playback device.

3 Slide the POWER switch repeatedly to light up the (Play/Edit) lamp.

4 Touch → [REC CTRL].

If you connect your camcorder to the device which has the S VIDEO jack, touch [SET] → [VIDEO INPUT] → [S VIDEO] → .

- Touch [SET] to change the recording mode or adjust the volume.
- Touch [SET] → [DISC REMAIN] → [ON] to display the remaining disc indicator all the time.

5 Insert a blank disc into your camcorder.

Format the disc if you use a new DVD-RW/DVD+RW (p. 47).

6 Start playing the cassette or the disc on the playback device, or select a TV program.

The picture played on the connected device appears on the LCD screen of your camcorder.

7 Touch [REC] at the point you want to start recording.

8 Touch at the point you want to stop recording.

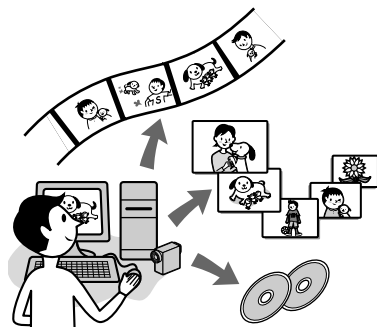
9 Touch [END].

-
- There may be a time difference between the point where you press [REC] and the actual point that the recording starts/stops.
 - You cannot record a picture as a still image even if you press the REC START/STOP (PHOTO) button during recording.
 - You cannot record images from a TV with no output jacks.

Before referring to the "First Step Guide" on your computer

When you install the Picture Package software on a Windows computer from the supplied CD-ROM, you can enjoy the following operations by connecting your camcorder to your computer.

- **Picture Package software does not support Macintosh computer.**



■ Viewing and Handling Pictures → **Picture Package DVD Viewer**

You can view the video and still images by selecting it from thumbnails. Video and still images are saved in folders by date.

You can delete unnecessary scenes of videos, or create DVDs with menus.

■ Music Video/Slideshow Producer → **Picture Package Producer2**

You can select your favorite video and still images and easily create an original video with added music and visual styles.

■ Duplicating a disc → **Picture Package Duplicator**

You can copy the disc you recorded with your camcorder.

- The CD-ROM (supplied) includes the following software.
 - USB Driver
 - Picture Package Ver.1.8
 - "First Step Guide"

About "First Step Guide"

The "First Step Guide" is an instruction manual you can refer to on your computer. This describes basic operations, from initial hookup of your camcorder and computer and making settings, to general operation the first time you use the software stored on the CD-ROM (supplied). After inserting the CD-ROM, referring to "Installing software" (p. 76), start the "First Step Guide," then follow the instructions.

About the help function of the software

The Help guide explains all the functions of all the software applications. Refer to the Help guide for further detailed operations after reading the "First Step Guide" thoroughly. To display the Help guide, click the [?] mark on the screen.

System requirements

OS: Microsoft Windows 2000 Professional, Windows XP Home Edition or Windows XP Professional

Standard installation is required. Operation is not assured if the above OS has been upgraded.

CPU: Intel Pentium III 600MHz or faster (Pentium III 1GHz or faster recommended)

Application: DirectX 9.0c or later (This product is based on DirectX technology. It is necessary to have DirectX installed.)/
Windows Media Player 7.0 or later/
Macromedia Flash Player 6.0 or later

Sound system: 16 bit stereo sound card and stereo speakers

Before referring to the “First Step Guide” on your computer (continued)

Memory: 128 MB or more (256 MB or more recommended)

Hard disk: Available memory required for installation: 250 MB or more (2GB or more when using Picture Package Duplicator)

Available free hard disk space recommended: 6 GB or more (depending on the size of the image files edited)

Display: 4 MB VRAM video card, Minimum 800 × 600 dots, High color (16 bit color, 65 000 colors), DirectDraw display driver capability (this product will not operate correctly at 800 × 600 dots or less, and 256 colors or less.)

Others: USB port (this must be provided as standard)

- Your camcorder is compatible with Hi-Speed USB (USB2.0).
You can transfer data at a faster rate using a computer compatible with Hi-Speed USB. When you connect a USB interface not compatible with Hi-Speed USB, the data transfer ratio will be that of USB1.1 (USB full speed).
- Operations are not guaranteed on all the recommended environments.

Installing the software

You need to install the software to your Windows computer to enjoy editing your recorded video and still images. The installation is required only for the first time.

1 Confirm that your camcorder is not connected to the computer.

2 Turn on the computer.

Log on as Administrators for installation.

Close all applications running on the computer before installing the software.

3 Place the CD-ROM in the disc drive of your computer.

The installation screen appears.



If the screen does not appear:

- ① Double-click [My Computer] (If you are using Windows XP, click [Start], then [My Computer].)
- ② Double-click [PICTUREPACKAGE] (Disc drive).*

* Drive names (such as (E:)) may vary depending on the computer.

4 Click [Install].

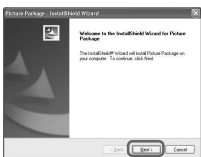


Depending on the operating system on the computer, a message appears notifying you that “First Step Guide” cannot be installed automatically with the InstallShield Wizard. In such a case, manually copy “First Step Guide” to your computer according to the message’s instructions.

5 Select the language for the application to be installed, then click [Next].



6 Click [Next].



7 Read [License Agreement], check [I accept the terms of the license agreement] when you agree, then click [Next].



8 Select where to save the software, then click [Next].



9 Select [NTSC], then click [Install].



10 Click [Install] on the [Ready to Install the Program] screen.

The installation of Picture Package starts.



11 Click [Next], then follow the on-screen instructions to install the “First Step Guide.”

Installing the software (continued)

Depending on the computer, this screen may not be displayed. In such a case, skip to step 12.



12 Click [Next], then follow the on-screen instructions to install “ImageMixer EasyStepDVD.”



13 If the [Installing Microsoft (R) DirectX(R)] screen is displayed, follow the steps below to install DirectX 9.0c. If not, skip to step 14.

① Read [License Agreement], then click [Next].



② Click [Next].



③ Click [Finish].



14 Make sure [Yes, I want to restart my computer now.] is checked, then click [Finish].



The computer turns off once, then starts up again automatically (Restart). The short-cut icons for [Picture Package Menu], [Picture Package Menu destination Folder] (and “First Step Guide,” if installed in step 11) appear on the desktop.




15 Remove the CD-ROM from the disc drive of your computer.

• If you have any questions about Picture Package, see “For inquiries about this software” (p. 79).

Viewing “First Step Guide”

Displaying “First Step Guide”

To view “First Step Guide” on your computer, Microsoft Internet Explorer Ver.6.0 or later is recommended. Double-click the  icon on the desktop.



You can also start by selecting [Start], [Programs] ([All Programs] for Windows XP), [Picture Package], and [First Step Guide], then start up [First Step Guide].

- To view “First Step Guide” in HTML without using automatic installation, copy the desired language folder from the [FirstStepGuide] folder on the CD-ROM, and then double-click [Index.html].
- Refer to “FirstStepGuide.pdf” in the following cases:
 - when printing “First Step Guide”
 - when “First Step Guide” is not displayed correctly due to the browser setting even in recommended environment.
 - when the HTML version of “First Step Guide” is not installed automatically.

For inquiries about this software

Pixela User Support Center

Pixela Home Page

<http://www.ppackage.com/>

– North America (Los Angeles) Telephone:

+1-213-341-0163

– Europe (U.K.) Telephone:

+44-1489-564-764

– Asia (Philippines) Telephone:

+63-2-438-0090

On Copyrights

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Troubleshooting

If you run into any problems using your camcorder, use the following table to troubleshoot the problem. If the problem persists, remove the power source and contact your Sony dealer.

Overall operations/Easy Handycam

The camcorder does not operate even when the power is set to on.

- Disconnect the AC Adaptor from the wall outlet or remove the battery pack, then reconnect it after about 1 minute. If the functions still do not work, press the RESET button (p. 33) using a sharp-pointed object. (If you press the RESET button, all settings, including the clock setting, are reset, except the Personal Menu items.)
- The temperature of your camcorder is extremely high. Turn off your camcorder and leave it for a while in a cool place.

Buttons do not work.

- During Easy Handycam operation, the available buttons are limited. Cancel Easy Handycam operation (p. 25).

You cannot turn the Easy Handycam operation on or off.

- During recording or communicating with another device via USB cable, you cannot turn Easy Handycam operation on or off. Cancel Easy Handycam operation (p. 25).

Settings change during Easy Handycam operation.

- Some of the settings of your camcorder are restored to the default setting when you set Easy Handycam operation (p. 25).

[DEMO MODE] does not start.

- Remove the disc from your camcorder (p. 58).

Your camcorder vibrates.

- A vibration occurs depending on the condition of the disc. This is not a malfunction.

A vibration is felt in your hand or a faint sound is heard during operation.

- This is not a malfunction.

A motor sound is heard from your camcorder periodically.

- This is not a malfunction.

A motor sound is heard from your camcorder when you close the disc cover without inserting a disc.

- Your camcorder is checking to see if a disc has been inserted or not. This is not a malfunction.

Your camcorder gets hot during use for a long period.

- This is not a malfunction. Turn off your camcorder and leave it for a while in a cool place.

Batteries/Power sources

The power does not turn on.

- The battery pack is not inserted into the camcorder. Insert a charged battery pack into the camcorder (p. 17).
- The battery pack is discharged or running low. Charge the battery pack (p. 17).
- The plug of the AC Adaptor has been disconnected from the wall outlet. Connect it to the wall outlet (p. 17).

The power abruptly turns off.

- When approximately 5 minutes have elapsed while you do not operate your camcorder, the camcorder is automatically turned off (A.SHUT OFF). Change the setting of [A.SHUT OFF] (p. 62), or turn on the power again, or use the AC Adaptor.
- The battery pack is discharged or running low. Charge the battery pack (p. 17).

The CHG (charge) lamp does not light when charging the battery pack.

- Slide the POWER switch to OFF (CHG) (p. 17).
- Insert the battery pack into the camcorder correctly (p. 17).
- No power is supplied from the wall outlet (p. 17).
- The battery charge is completed (p. 17).

The CHG (charge) lamp flashes when charging the battery pack.

- Insert the battery pack into the camcorder correctly (p. 17). If the problem persists, disconnect the AC Adaptor from the wall outlet and contact your Sony dealer. The battery pack may be damaged.

The power turns off frequently although the remaining battery indicator indicates that the battery pack has enough power to operate.

- A problem has occurred in the remaining battery time indicator, or the battery pack has not been charged enough. Fully charge the battery again to correct the indication (p. 17).

The remaining battery time indicator does not indicate the correct time.

- The temperature of the environment is too high or too low. This is not a malfunction.
- The battery pack has not been charged enough. Fully charge the battery again. If the problem persists, replace the battery pack with a new one (p. 17).
- The indicated time may not be correct depending on the environment of use.

The battery pack is quickly discharged.

- The temperature of the environment is too high or too low. This is not a malfunction.
- The battery pack has not been charged enough. Fully charge the battery again. If the problem persists, replace the battery pack with a new one (p. 17).

A problem occurs when the camcorder is connected to the AC Adaptor.

- Turn off the power, and disconnect the AC Adaptor from the wall outlet. Then, connect it again.

LCD screen

An unknown picture appears on the screen.

- The camcorder is in [DEMO MODE] (p. 58). Touch the LCD screen or insert a disc to cancel [DEMO MODE].

An unknown indicator appears on the screen.

- They may be warning indicators or messages (p. 93).

The picture remains on the LCD screen.

- This occurs if you disconnect the AC Adaptor from the wall outlet or remove the battery pack without turning off the power first. This is not a malfunction.

You cannot turn the LCD backlight off.

- During Easy Handycam operation, you cannot turn the LCD backlight on/off using the DISP/BATT INFO. Cancel Easy Handycam operation (p. 25).

The buttons do not appear on the touch panel.

- Touch the LCD screen lightly.
- Press DISP/BATT INFO on your camcorder (or DISPLAY on the Remote Commander) (p. 21, 37).

The buttons on the touch panel do not work correctly or do not work at all.

- Adjust the screen ([CALIBRATION]) (p. 102).
- If you change the aspect ratio of the picture, the aspect ratio of the button and indicators on the touch panel will switch to the selected one (p. 55).

Disc

The disc cannot be removed.

- Make sure the power source (battery pack or AC Adaptor) is connected correctly (p. 17).
- Remove the battery pack from the camcorder, then insert it again (p. 17).
- Insert a charged battery pack into the camcorder (p. 17).
- The temperature of your camcorder is extremely high. Turn off your camcorder and leave it for a while in a cool place.
- Moisture condensation has occurred with the disc. Turn off your camcorder and leave it for about 1 hour (p. 101).
- Finalizing is interrupted by turning off your camcorder. Turn on your camcorder and remove the disc after finalizing is completed.

Remaining disc space indicator is not displayed.

- Set [DISC REMAIN] to [ON] to always display the remaining disc space indicator (p. 61).




The indicators of the disc type and the recording format on the LCD screen are grayed out.

- The disc may be created by other than your camcorder. You can play back the disc on your camcorder, but you cannot record additional scenes.

Recording

Refer also to “Adjusting the image during recording” (p. 84).

Pressing REC START/STOP (PHOTO) does not record movies/still images.

- Slide the POWER switch repeatedly to light up the  (Movie) or  (Still) lamp.
- Your camcorder is recording the scene you have just shot on the disc. You cannot press REC START/STOP (PHOTO) while [CAPTURE] or  appears on the LCD screen (p. 26, 30).
- The disc has run out of space. Use a new disc or format the disc (DVD-RW/DVD+RW only, p. 47).
- The DVD-RW (VIDEO mode)/DVD+RW has been finalized. Make a disc to be able to record additional scenes (p. 46).
- The temperature of your camcorder is extremely high. Turn off your camcorder and leave it for a while in a cool place.
- Moisture condensation has occurred with the disc. Turn off your camcorder and leave it for about 1 hour (p. 101).

The ACCESS lamp lights up even when you stop recording.

- Your camcorder is recording the scene you have just shot on the disc.

The shutter sound is not heard when you record a still image.

- Set [BEEP] to [ON] (p. 62).

The actual recording time for movie is less than the expected approximate recording time.

- When you record an object that moves fast, the time available for recording may shorten (p. 12, 59).

The recording stops.

- The temperature of your camcorder is extremely high. Turn off your camcorder and leave it for a while in a cool place.
- Moisture condensation has occurred with the disc. Turn off your camcorder and leave it for about 1 hour (P. 101).

There is a time difference between the point where you press the REC START/STOP (PHOTO) and the point that the recording movie starts/stops.

- On your camcorder, there may be a slight time difference between the point where you press the REC START/STOP (PHOTO) and the actual point that recording movie starts/stops. This is not a malfunction.

Adjusting the image during recording

Refer also to “Setup items” (p. 86).

The auto focus does not function.

- Set [FOCUS] to [AUTO] (p. 54).
- The recording conditions are not suitable for auto focus. Adjust the focus manually (p. 54).

[STEADYSHOT] does not function.

- Set [STEADYSHOT] to [ON] (p. 56).
- [STEADYSHOT] may not work for an excessive camera shake even if [STEADYSHOT] is set to [ON].

The back light function does not function.

- The back light function is cancelled when you set [EXPOSURE] to [MANUAL] (p. 53) or select [SPOT METER] (p. 53).
- The back light function does not work during Easy Handycam operation. Cancel Easy Handycam operation (p. 25).

A vertical band appears when recording candlelight or electric light in the dark.

- This occurs when the contrast between the subject and the background is too high. This is not a malfunction.

A vertical band appears when recording a bright subject.

- This phenomenon is called the smear effect. This is not a malfunction.

Tiny spots in white, red, blue, or green appear on the screen.

- The spots appear when you are recording in [COLOR SLOW S]. This is not a malfunction.

The screen is so dark that pictures cannot be seen.

- The LCD screen backlight is switched off. Turn on the LCD backlight by pressing and holding DISP/BATT INFO (p. 21).

Flickering or changes in color occurs.

- This occurs when recording pictures under a fluorescent lamp, sodium lamp, or mercury lamp with [PORTRAIT] or [SPORTS]. Cancel [PROGRAM AE] in this case (p. 52).

Black bands appear when you record a TV screen or computer screen.

- Set [STEADYSHOT] to [OFF] (p. 56).

Remote Commander

The supplied Remote Commander does not function.


- Set [REMOTE CTRL] to [ON] (p. 61).
- Insert a battery into the battery holder with the +/- polarities correctly matching the +/- marks (p. 104).
- Remove any obstructions between the Remote Commander and the remote sensor.
- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.

Another DVD device malfunctions when you use the supplied Remote Commander.

- Select a commander mode other than DVD 2 for your DVD device, or cover the sensor of your DVD device with black paper.

Playing back a disc on your camcorder

You cannot play back a disc.

- Slide the POWER switch repeatedly to light up  (Play/Edit).
- Check the disc compatibility (p. 13).
- Insert a disc with the recording side facing your camcorder (p. 23).
- The disc recorded in other devices may not be played back on your camcorder.

The playback picture is distorted.

- Clean the disc using the cleaning cloth (supplied, p. 5).

“” is indicated on an image in the VISUAL INDEX screen.

- Clean the disc using the cleaning cloth (supplied, p. 5).
- Loading of the data may have failed. It may be indicated correctly when you turn off the power and then turn it on again, or remove the disc once and insert it again.

5.1ch appears on the LCD screen.

- 5.1ch surround sound was recorded on the disc on another device. Your camcorder is not compatible with 5.1ch surround recording.

No sound or only a low sound is heard when playing back a disc.

- Set [MULTI-SOUND] to [STEREO] (p. 60).
- Turn up the volume (p. 31).
- When you record sound with [MICREF LEVEL] set to [LOW] (p. 60), the recorded sound may be difficult to hear.

Playing back a disc on other players

You cannot play back the disc or a disc cannot be recognized.

- Clean the disc using the cleaning cloth (supplied, p. 5).
- Finalize the disc (p. 40).
- A disc recorded in VR mode cannot be played back on a player that does not support VR mode. Check the compatibility in the instruction manual of the playback device.

The playback picture is distorted.

- Clean the disc using the cleaning cloth (supplied, p. 5).


“?” is indicated on an image in the DVD menu.

- Loading of the data may have failed when the disc was finalized. For DVD-RW (VIDEO mode)/DVD+RW, make the disc capable of additional recording (p. 46), then remake the DVD menu by finalizing the disc again. The DVD menu may be displayed correctly.

Playback freezes for an instant between the scenes.

- The image may freeze for an instant between scenes depending on the DVD device being used.

Playback does not move to the previous scene when you press .


- If you press  at the beginning of the 2nd title of 2 titles that have been made automatically by your camcorder, playback may not move to the previous scene. Refer to the instruction manual of the playback device for further information.

Setup items

Setup items are grayed out.

- You cannot select grayed items in the current situation.

You cannot use [PROGRAM AE].

- You cannot use [PROGRAM AE] together with:
 - [COLOR SLOW S]
 - [OLD MOVIE]
- [SPORTS] will not work when the POWER switch is set to  (Still).

You cannot use [SPOT METER].

- You cannot use [SPOT METER] together with [COLOR SLOW S].
- If you set [PROGRAM AE], [SPOT METER] is automatically set to [AUTO].

You cannot use [EXPOSURE].

- You cannot use [EXPOSURE] together with [COLOR SLOW S].
 - If you set [PROGRAM AE], [EXPOSURE] is automatically set to [AUTO].
-

You cannot use [SPOT FOCUS].

- You cannot use [SOPT FOCUS] together with [PROGRAM AE].
-

[COLOR SLOW S] does not operate correctly.

- [COLOR SLOW S] may not operate correctly in total darkness.
 - You cannot use [COLOR SLOW S] together with:
 - [FADER]
 - [D. EFFECT]
 - [PROGRAM AE]
 - [EXPOSURE]
 - [SPOT METER]
-

You cannot use [SELF-TIMER].

- You cannot use [SELF-TIMER] together with [FADER].
-

You cannot use [FADER].

- You cannot use [FADER] together with:
 - [COLOR SLOW S]
 - [D. EFFECT]
-

You cannot use [D. EFFECT].

- You cannot use [D. EFFECT] together with:
 - [COLOR SLOW S]
 - [FADER]
 - You cannot use [OLD MOVIE] together with:
 - [PROGRAM AE]
 - [PICT. EFFECT]
 - [WIDE SELECT]
-

You cannot use [PICT.EFFECT].

- You cannot use [PICT.EFFECT] together with [OLD MOVIE].
-

You cannot adjust [LCD BL LEVEL].

- You cannot adjust [LCD BL LEVEL] when the power is supplied from the AC Adaptor.
-

Editing (DVD-RW: VR mode)


Unable to edit.

- There are no images recorded on the disc.
- The disc is unable to edit because of the condition of the image.
- You cannot edit an image protected on another device.

Scenes cannot be added to the Playlist.

- The disc is full, or the added scenes exceed 999. Delete unnecessary scenes or add all the still images by converting them to a movie (Photomovie, p. 70).

A movie cannot be divided.

- A movie that is too short cannot be divided.
- A movie with the  mark cannot be divided (p. 66, 70).
- A movie protected on another device cannot be divided.

A scene cannot be deleted.

- A scene protected on another device cannot be deleted.

Dubbing/Connecting to other devices

Pictures from connected devices are not displayed on the LCD screen.

- Touch [P-MENU] → [REC CTRL] (p. 74).

Pictures from connected devices cannot be zoomed.

- You cannot zoom scenes input from another device on your camcorder.

No sound is heard when playing back a disc.

- The audio will not be output when you connect a device via the S video plug only. Connect the white and red plugs of the A/V connecting cable, too (p. 72).

You cannot dub correctly using the A/V connecting cable.

- Set [DISP OUTPUT] to [LCD PANEL] (p. 62).
- The A/V connecting cable is not connected properly. Make sure that the A/V connecting cable is connected to the proper jack, i.e. to the output jack of a device you are dubbing a picture from, or to the input jack of another device for dubbing a picture from your camcorder (p. 72).

Others

Unable to finalize.

- Battery is running out during finalizing. Use the AC Adaptor.
- The disc has already been finalized. If you are using a DVD-RW (VIDEO mode)/DVD+RW, follow the required procedure to record additional material on the disc (p. 46).

You cannot edit or record additional material on a disc using other devices.

- You may not be able to edit a disc recorded on your camcorder using other devices.

The disc title cannot be changed.

- You cannot record a disc title on a finalized DVD-R.
- The disc has already been finalized. If you are using a DVD-RW (VIDEO mode)/DVD+RW, follow the required procedure to record additional material on the disc (p. 46).
- The disc title may not be changed on your camcorder if the disc title has been made by another device.

A photomovie cannot be created.

- There are no still images.
- There may be a lot of still images on a disc and the remaining disc capacity is low. Delete unnecessary images from the disc (p. 66).

The melody or beep sounds for 5 seconds.

- The temperature of your camcorder is extremely high. Turn off your camcorder and leave it for a while in a cool place.
- Moisture condensation has occurred with the disc. Turn off your camcorder and leave it for about 1 hour (p. 101).
- Some problems have occurred in your camcorder. Remove the disc and insert it again, then operate your camcorder again.

Connecting to a computer

The computer does not recognize your camcorder.

- Install the Picture Package software (p. 76).
- Disconnect the cable from the computer and camcorder, then connect them again firmly.
- Disconnect USB device other than the keyboard, the mouse, and the camcorder from the computer.
- Disconnect the cable from the computer and camcorder, restart the computer, then connect them again correctly.
- Confirm the USB driver is correctly installed with the following procedures.

For Windows XP

- 1 Click [Start], then [Control Panel].
- 2 Click [Performance and Maintenance], then [System].

The [System Properties] window appears.

- 3 Click the [Hardware] tab.
- 4 Click [Device Manager].

The [Device Manager] window appears.

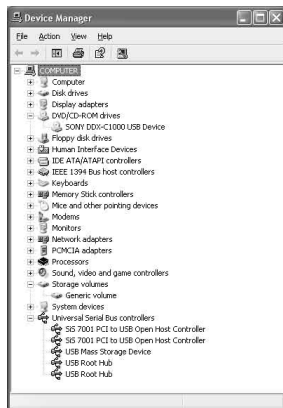
- 5 Make sure that [SONY DDX-C1000 USB Device] appears in [DVD/CD-ROM drives], [Generic volume] in [Storage volumes], and [USB Mass Storage Device] in [Universal Serial Bus controllers] respectively.

When all the devices appear, the USB driver is installed correctly. If any of these devices are not shown, install the USB driver.

- ① Place the supplied CD-ROM in the disc drive on your computer.
- ② Double-click [My Computer].
- ③ Right-click [PICTUREPACKAGE] icon (Disc drive)*, then click [Open].

*Drive names (such as (E:)) may vary depending on the computer.

- ④ Double-click [Driver] → [Setup. exe].



For Windows 2000

- 1 Click [Start], [Settings], then [Control Panel].
- 2 Click [System].

The [System Properties] window appears.

- 3 Click the [Hardware] tab.
- 4 Click [Device Manager].

The [Device Manager] window appears.

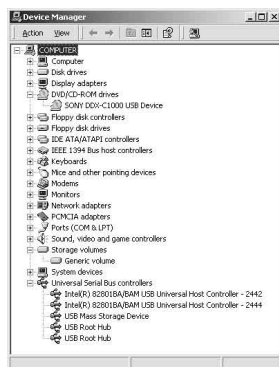
- 5 Make sure that [SONY DDX-C1000 USB Device] appears in [DVD/CD-ROM drives], [Generic volume] in [Storage volumes], and [USB Mass Storage Device] in [Universal Serial Bus controllers] respectively.

When all the devices appear, the USB driver is installed correctly. If any of these devices are not shown, install the USB driver.

- ① Place the supplied CD-ROM in the disc drive on your computer.
- ② Double-click [My Computer].
- ③ Right-click [PICTUREPACKAGE] icon (Disc drive)*, then click [Open].

*Drive names (such as (E:)) may vary depending on the computer.

- ④ Double-click [Driver] → [Setup. exe].



An error message appears when you place the supplied CD-ROM in your computer.

- Set the computer display as follows:
 - Windows: 800 × 600 dots or more, High Color (16 bits, 65 000 colors) or more

You cannot use the supplied CD-ROM on a Macintosh computer.

- The supplied CD-ROM is not compatible with a Macintosh computer.

[Cannot start Easy Handycam with USB connected] or [Cannot cancel Easy Handycam with USB connected] appears on the screen of your camcorder.

- You cannot start or cancel the Easy Handycam operation while the USB cable is connected. Disconnect the USB cable from your camcorder first.

You cannot transfer image data from your camcorder to a computer.

- Set [USB SPEED] to [FULL SPEED] (p. 60).

The images or sound of your camcorder cannot be played back correctly.

- When you connect your camcorder to a computer not compatible with Hi-Speed USB (USB2.0), it may not be played back correctly. However, it does not affect the images or sound transferred to your computer.
- When you set [USB SPEED] to [FULL SPEED] (p. 60), it may not be played back correctly. However, it does not affect the images or sound transferred to your computer.
- Depending on the computer you use, the played back image or sound may stop temporarily, but this does not affect images or sound transferred to your computer.

You cannot write data from your computer on a disc in your camcorder using the USB cable.

- The disc is not compatible with your camcorder. Use a disc compatible with your camcorder (p. 13).
- You cannot write data from other than the Picture Package on a disc in your camcorder.

Picture Package does not function correctly.

- Close Picture Package, then restart the computer.

An error message appears while operating Picture Package.

- Close Picture Package first, then slide the POWER switch on your camcorder to turn on another lamp.

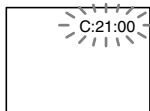
The “First Step Guide” is not displayed correctly.

- Refer to the PDF file of “First Step Guide” (FirstStepGuide.pdf). For details on copying the PDF file, see page 79.

Warning indicators and messages

Self-diagnosis display/Warning indicators

If indicators appear on the LCD screen, check the following. Some symptoms can be fixed by yourself. If the problem persists even after you have tried a couple of times, contact your Sony dealer or local authorized Sony service facility.



C:(or E:) □□:□□ (Self-diagnosis display)

C:04:□□

- The battery pack is not an "InfoLITHIUM" battery pack. Use an "InfoLITHIUM" battery pack (p. 99).

C:13:□□

- The disc is faulty. Use a compatible disc with your camcorder (p. 13).
- The disc is dirty or has scratches on it. Clean the disc with the supplied cleaning cloth.

C:21:□□

- Moisture condensation has occurred with the disc. Turn off your camcorder and leave it for about 1 hour (p. 101).

C:32:□□

- Symptoms that are not described above have occurred. Remove the disc and insert it again, then operate your camcorder again.
- Disconnect the power source. Reconnect it again and operate your camcorder again.

E:20:□□ / E:31:□□ / E:40:□□ /
E:61:□□ / E:62:□□ / E:91:□□ /
E:94:□□

- A malfunction that you cannot service has occurred. Contact your Sony dealer or local authorized Sony service facility. Inform them of the 5-digit code, which starts from "E."

100-0001 (Warning indicator pertaining to files)

Slow flashing




- The file is damaged.
- The file is unreadable.

ⓘ (Warning indicator pertaining to discs)

Slow flashing

- A disc is not inserted.*
- Less than 5 minutes remains for recording movies.
- Fewer than 30 images can be accommodated in the remaining space.

Fast flashing

- An unrecognizable disc is inserted.*
- A finalized DVD-RW (VIDEO mode) or DVD+RW is inserted into your camcorder when  (Movie) or  (Still) is selected.
- The disc is fully recorded.*
- A disc that cannot be read or written is inserted, such as the single-sided disc inserted inside out.
- The disc recorded in the different TV color system from your camcorder is inserted when  (Movie) is selected.*


You need to remove the disc*

Fast flashing

- An unrecognizable disc is inserted.
- The disc is fully recorded.
- An error might have occurred with the disc drive in your camcorder.

(Battery level warning)

Slow flashing

- The battery pack is nearly used up.
- Depending on the operating, environment, or battery conditions,  may flash, even if there are approximately 20 minutes remaining.

(Moisture condensation warning)*

Fast flashing

- Moisture condensation has occurred with the disc. Turn off your camcorder and leave it for about 1 hour.

(High temperature warning)

Slow flashing

- The temperature of your camcorder is getting higher.

Fast flashing

- The temperature of your camcorder is extremely high.* Turn off your camcorder and leave it for a while in a cool place.

* You hear a melody when the warning indicators appear on the screen (p. 62).

Description of warning messages

If messages appear on the screen, follow the instructions.

Battery

Use the “infoLITHIUM” battery pack (p. 99).

Battery level is low (p. 17, 99).

Old Battery Use a new one (p. 99).

Drive

 **Drive error Turn on power again**

- A problem may have occurred with the disc drive. Turn off and then turn on again.


Moisture condensation

 **Moisture condensation Turn off for 1H** (p. 101)

 **Condensation Cannot open Try later** (p. 101)

Disc

 **Overheated Recording disabled**

 **Overheated Cannot open Try later**

Recording disabled

- A malfunction has occurred with the disc and it cannot be used.

Disc movie area full Cannot record movies

- Delete unnecessary scenes (p. 66).

Scene number full

- Delete unnecessary scenes (p. 66).

Disc full Cannot record

- Delete unnecessary scenes (p. 66).

Movie recording disabled

- Movies cannot be recorded due to some limitations of the disc. However, you might be able to record still images.

Still recording disabled

- Still images cannot be recorded due to some limitations of the disc. However, you might be able to record movies.

Playback prohibited

- You are trying to play back an incompatible disc with your camcorder.

Disc finalized Cannot record on disc

- A finalized DVD-R cannot be recorded. Use a new disc.

Need to unfinalize

- To record on the finalized DVD-RW (VIDEO mode), unfinalize it (p. 46).

Disc error Remove disc

- The incompatible disc with your camcorder is inserted. Your camcorder cannot recognize the disc because of malfunctions such as scratches, or the disc is not set correctly.

Format error

- The disc recorded in the different format code from your camcorder. Formatting the disc may enable you to use the disc on your camcorder (DVD-RW/DVD+RW only, p. 47) .

Access error

- An error occurred during reading or writing the disc.

Data error

- An error occurred during reading or writing the disc.

Lens cover

Cover is not open (p. 20)

Easy Handycam

Cannot start Easy Handycam (p. 25)

Cannot cancel Easy Handycam (p. 25)

Cannot start Easy Handycam with USB connected (p. 25)

Cannot cancel Easy Handycam with USB connected (p. 25)

Invalid during Easy Handycam operation (p. 25)

No recording in Easy Handycam operation (p. 25)

- The DVD+RW has been finalized. Make the disc to be able to record additional scenes (p. 46).
-

■ Other

Please connect AC adaptor

- When the battery capacity is low, you are trying to finalize or format a disc, or making the disc capable of additional recording. Use the AC Adaptor as the power source to prevent the battery from wearing out in the middle of those operations.
-

Playlist full

- You cannot create the Playlist exceeding 999 scenes.
 - You cannot add still images in a Playlist due to the lack of remaining capacity on the disc.
-

Cannot divide

- You cannot divide a movie that was converted from still images.
 - You cannot divide a movie that is extremely short.
-

Data protected

- The disc has been protected on another device.

Copy inhibit

- You cannot copy scenes with the copy protection signal.
-

Disc cover open, accidentally Turn on power again (p. 20)

Recovering data Avoid any vibration

- Your camcorder tries to recover data automatically if the data writing was not performed properly.
-

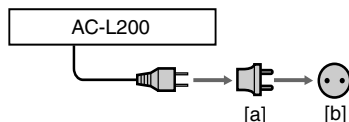
Cannot recover data

- Writing data to the disc has failed. Attempts were made to recover the data, but they were unsuccessful.
-

Using your camcorder abroad

Power supply

You can use your camcorder in any countries/regions using the AC Adaptor supplied with your camcorder within the AC 100 V to 240 V, 50/60 Hz range. Use a commercially available AC plug adaptor [a], if necessary, depending on the design of the wall outlet [b].



On TV color systems

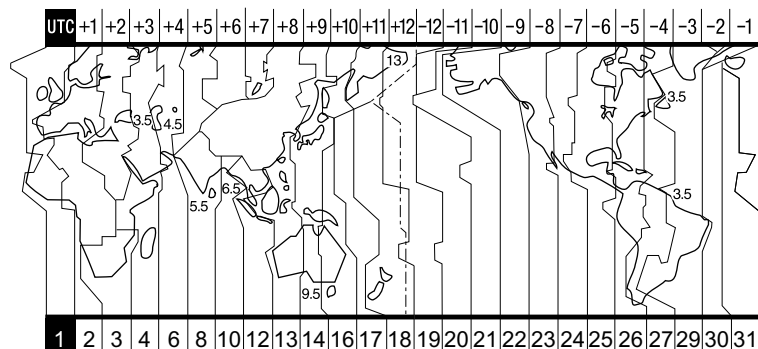
Your camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV with an AUDIO/VIDEO input jack.

System	Used in
NTSC	Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Guyana, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.
PAL	Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Holland, Hong Kong, Hungary, Italy, Kuwait, Malaysia, New Zealand, Norway, Poland, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, United Kingdom, etc.
PAL - M	Brazil
PAL - N	Argentina, Paraguay, Uruguay.
SECAM	Bulgaria, France, Guiana, Iran, Iraq, Monaco, Russia, Ukraine, etc.

Simple setting of the clock by time difference

You can easily set the clock to the local time by setting a time difference when using your camcorder abroad. Set [AREA SET] and [DST SET]/[SUMMERTIME] in TIME/LANGU. (p. 63).


World time difference



Area code	Time-zone differences	Area setting
1	GMT	Lisbon, London
2	+01:00	Berlin, Paris
3	+02:00	Helsinki, Cairo
4	+03:00	Moscow, Nairobi
5	+03:30	Tehran
6	+04:00	Abu Dhabi, Baku
7	+04:30	Kabul
8	+05:00	Karachi, Islamabad
9	+05:30	Calcutta, New Delhi
10	+06:00	Almaty, Dhaka
11	+06:30	Rangoon
12	+07:00	Bangkok, Jakarta
13	+08:00	HongKong, Singapore
14	+09:00	Seoul, Tokyo
15	+09:30	Adelaide, Darwin
16	+10:00	Melbourne, Sydney

Area code	Time-zone differences	Area setting
17	+11:00	Solomon Is
18	+12:00	Fiji, Wellington
19	-12:00	Eniwetok, Kwajalein
20	-11:00	Midway Is., Samoa
21	-10:00	Hawaii
22	-09:00	Alaska
23	-08:00	LosAngeles, Tijuana
24	-07:00	Denver, Arizona
25	-06:00	Chicago, MexicoCity
26	-05:00	New York, Bogota
27	-04:00	Santiago
28	-03:30	St. John's
29	-03:00	Brasilia, Montevideo
30	-02:00	Fernando de Noronha
31	-01:00	Azores

About the “InfoLITHIUM” battery pack

Your camcorder operates only with an “InfoLITHIUM” battery pack, and is compatible with an “InfoLITHIUM” A series battery pack. “InfoLITHIUM” A series battery packs have the  mark.

What is an “InfoLITHIUM” battery pack?

An “InfoLITHIUM” battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between your camcorder and an AC Adaptor/charger (optional).

The “InfoLITHIUM” battery pack calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes.

Charging the battery pack


- Be sure to charge the battery pack before you start using your camcorder.
- It is recommended that you charge the battery pack in an ambient temperature of between 10°C and 30°C (50°F to 86°F) until CHG (charge) lamp turns off. If you charge the battery pack outside of this temperature range, you may not be able to charge the battery pack efficiently.
- After charging is complete, either disconnect the cable from the DC IN jack on your camcorder or remove the battery pack.

Effective use of the battery pack


- Battery pack performance decreases when the surrounding temperature is 10°C (50°F) or below, and the length of time you can use the battery pack becomes shorter. In that case, do one of the following to use the battery pack for a longer time.
 - Put the battery pack in a pocket to warm it up, and insert it into your camcorder right before you start taking shots.
 - Use a large capacity battery pack: NP-FA70 (optional).

- Frequent playback, fast forward or reverse operation wears out the battery pack faster. It is recommended that you use a large capacity battery pack: NP-FA70 (optional).
- Be sure to slide the POWER switch to OFF (CHG) when not shooting or playing back on your camcorder. The battery pack is also consumed when your camcorder is in the standby mode or playback is paused.
- Have spare battery packs ready for 2 or 3 times the expected recording time, and make trial recordings on a DVD-RW/DVD+RW (optional) before making the actual recording.
- Do not expose the battery pack to water. The battery pack is not water-resistant.

Remaining battery time indicator

- If the power goes off even though the remaining battery time indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again so that the indication on the remaining battery time indicator is correct. Note, however, that the correct battery indication sometimes will not be restored if the battery is used in high temperatures for a long time or left in a fully charged state, or the battery pack is used frequently. Regard the remaining battery time indication as the approximate shooting time.
- The  mark indicating that there is little remaining battery time sometimes flashes depending on the operating conditions or ambient temperature and environment even if the remaining battery time is approximately 20 minutes.

How to store the battery pack

- If the battery pack is not used for a long time, fully charge the battery pack and discharge it on your camcorder once a year to maintain the proper function. To store the battery pack, remove it from your camcorder and put it in a dry, cool place.
- To use the battery pack up on your camcorder, leave your camcorder in the recording standby without a disc inserted with [A.SHUT OFF] set to [NEVER] in  STANDARD SET in the SETUP screen until the power goes off (p. 62).

Battery life

- The battery life is limited. Battery capacity drops little by little as you use it more and more, and as time passes. When the available battery time is shortened considerably, a probable cause is that the battery pack has reached the end of its life. Please buy a new battery pack.
- The battery life varies according to how it is stored, the operating conditions, and environment in which each battery pack is used.

Maintenance and precautions

On use and care

- Do not use or store the camcorder and accessories in the following locations:
 - Anywhere extremely hot or cold. Never leave them exposed to temperatures above 60°C (140°F), such as under direct sunlight, near heaters or in a car parked in the sun. They may malfunction or become deformed.
 - Near strong magnetic fields or mechanical vibration. The camcorder may malfunction.
 - Near strong radio waves or radiation. The camcorder may not be able to record properly.
 - Near AM receivers and video equipment. Noise may occur.
 - On a sandy beach or anywhere dusty. If sand or dust gets in your camcorder, it may malfunction. Sometimes this malfunction cannot be repaired.
 - Near windows or outdoors, where the LCD screen or the lens may be exposed to direct sunlight. This damages the LCD screen.
 - Anywhere very humid.
- Operate your camcorder on DC 7.2 V (battery pack) or DC 8.4 V (AC Adaptor).
- For DC or AC operation, use the accessories recommended in these operating instructions.
- Do not let your camcorder get wet, for example, from rain or sea water. If your camcorder gets wet, it may malfunction. Sometimes this malfunction cannot be repaired.
- If any solid object or liquid gets inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling, disassembling, modifying, physical shock, or impact such as hammering, dropping or stepping on the product. Be particularly careful of the lens.
- Keep the POWER switch set to OFF (CHG) when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- When disconnecting the power cord, pull it by the plug and not the cord.
- Do not damage the power cord such as by placing anything heavy on it.
- Keep metal contacts clean.

- Keep the Remote Commander and button-type battery out of children's reach. If the battery is accidentally swallowed, consult a doctor immediately.
- If the battery electrolytic liquid has leaked,
 - consult your local authorized Sony service facility.
 - wash off any liquid that may have contacted your skin.
 - if any liquid gets in your eyes, wash with plenty of water and consult a doctor.

■ When not using your camcorder for a long time

- Occasionally turn it on and let it run by such as playing back discs or recording for about 3 minutes.
- Remove a disc from your camcorder.
- Use up the battery pack completely before storing it.

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the disc, or on the pickup lens. This may cause a malfunction to your camcorder. If there is moisture inside your camcorder, [Moisture condensation Turn off for 1H] or [Condensation Cannot open Try later] appears. The indication will not appear when the moisture condenses on the camera lens.

■ If moisture condensation has occurred

Turn off your camcorder, and leave it for about 1 hour.

■ Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a humid place as follows:

- You bring your camcorder from a ski slope into a place warmed up by a heating device.
- You bring your camcorder from an air conditioned car or room into a hot place outside.

Maintenance and precautions (continued)

- You use your camcorder after a squall or a shower.
- You use your camcorder in a hot and humid place.

■ How to prevent moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and seal it tightly. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about 1 hour).

On the LCD screen

- Do not exert excessive pressure on the LCD screen. Blurs appear and it may cause a malfunction of your camcorder.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While you are using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

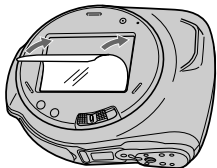
■ To attach the LCD protective sheet

Before using your camcorder, it is recommended that you attach the supplied LCD protective sheet on the LCD screen to protect it from scratches or dirt.

- ① Wipe any dirt or dust from the LCD screen with the supplied cleaning cloth.
- ② Peel the film off the LCD protective sheet.



- ③ Attach the LCD protective sheet on the LCD screen.



- When attaching the sheet, make sure there is no dirt or dust on the LCD screen, and no bubbles have formed between the sheet and the LCD screen.
- This sheet protects the LCD screen from dirt or dust. Note that it does not protect the LCD screen from excessive pressure.



■ To clean the LCD screen

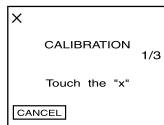
If fingerprints or dust make the LCD screen dirty, use the cleaning cloth (supplied) to clean the LCD screen.

When you use the LCD Cleaning Kit (optional), do not apply the cleaning liquid directly to the LCD screen. Use cleaning paper moistened with the liquid.

■ On adjustment of the LCD screen (CALIBRATION)

The buttons on the touch panel may not work correctly. If this happens, operate the following procedures. It is recommended you connect your camcorder to the wall outlet using the supplied AC Adaptor during the operation.

- ① Slide the POWER switch to light up the  (Play/Edit) lamp.
- ② Disconnect cables other than that of the AC Adaptor from your camcorder, then remove the disc from your camcorder.
- ③ Touch **[P.MENU]** → **[SETUP]** →  **STANDARD SET** → **[CALIBRATION]**.



- ④ Touch "x" displayed on the screen with a thin object.
The position of "x" changes.
Touch **[CANCEL]** to cancel.

If you failed to press the right spot, try the calibration again.

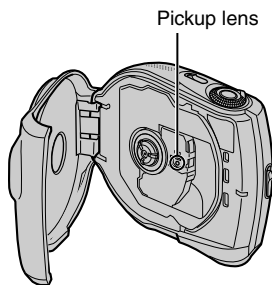
- Do not use a sharp-pointed tool to calibrate the LCD screen. Doing so may damage the surface of the screen.

On handling the casing

- If the casing is soiled, clean the camcorder body with a soft cloth lightly moistened with water, and then wipe the casing with a dry soft cloth.
- Avoid the following to prevent the finish from being damaged.
 - Using chemicals such as thinner, benzene, alcohol, chemical cloths, repellent and insecticide.
 - Handling with above substances on your hands.
 - Leaving the casing in contact with rubber or vinyl objects for a long period of time.

On the pickup lens

- Do not touch the lens inside the disc cover. Keep the disc cover closed except when inserting and removing the disc, to keep dust out.
- When the camcorder does not work because the pickup lens is dirty, clean it with a blower (not supplied). Do not touch the pickup lens directly during cleaning because this may cause the camcorder to malfunction.



Care and storage of the camera lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
 - when there are fingerprints on the lens surface.
 - in hot or humid locations.
 - when the lens is exposed to salty air such as at the seaside.
- Store the lens in a well-ventilated location subject to little dirt or dust.
- To prevent mold, periodically clean the lens as described above. It is recommended that you operate your camcorder about once a month to keep it in optimum state for a long time.

To charge the pre-installed rechargeable battery

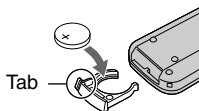
Your camcorder has a pre-installed rechargeable battery to retain the date, time, and other settings even when the POWER switch is set to OFF (CHG). The pre-installed rechargeable battery is always charged while you are using your camcorder but it will get discharged gradually if you do not use your camcorder. The rechargeable battery will be fully discharged in **about 2 months** if you do not use your camcorder at all. However, even if the pre-installed rechargeable battery is not charged, the camcorder operation will not be affected as long as you are not recording the date.

■ Procedures

Connect your camcorder to a wall outlet using the AC Adaptor supplied with your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.

To change the battery of the Remote Commander

- ① While pressing on the tab, inset your fingernail into the slit to pull out the battery case.
- ② Place a new battery with the + side facing up.
- ③ Insert the battery case back into the Remote Commander until it clicks.



WARNING

Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.

Caution

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

- A button-type lithium battery (CR2025) is used in the Remote Commander. Do not use batteries other than the CR2025.
- When the lithium battery becomes weak, the operating distance of the Remote Commander may shorten, or the Remote Commander may not function properly. In this case, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.

Specifications

System

Video compression format	MPEG2/JPEG (Still images)
Audio compression format	Dolby Digital 2ch. Dolby Digital Stereo Creator
Video signal	NTSC color, EIA standards
Usable discs	8cm DVD-R/DVD-RW DVD+RW
Recording format	Movie DVD-R:DVD-VIDEO DVD-RW:DVD-VIDEO (VIDEO mode), DVD-VideoRecording (VR mode) DVD+RW:DVD+RW Video
	Still image Exif* Ver.2.2
Recording/playback time	HQ: Approx. 20 min SP: Approx. 30 min LP: Approx. 60 min
Image device	3 mm (1/6 type) CCD (Charge Coupled Device) Gross: Approx. 680 000 pixels Effective: For movies Approx. 340 000 pixels For still images Approx. 340 000 pixels
Lens	Carl Zeiss Vario-Tessar combined power zoom lens Optical: 10x, Digital: 20x, 120x F=1.7-2.2
Focal length	f=2.3 - 23 mm (3/32 - 29/32 in.) When converted to a 35 mm still camera: For movies 44 - 440 mm (1 3/4 - 17 3/8 in.) For still images 44 - 440 mm (1 3/4 - 17 3/8 in.)
Color temperature	[AUTO], [ONE PUSH], [INDOOR] (3 200 K), [OUT-DOOR] (5 800 K)
Minimum illumination	5 lx (lux) (F1.7)

- * "Exif" is a file format for still images, established by the JEITA (Japan Electronics and Information Technology Industries Association). Files in this format can have additional information such as your camcorder's setting information at the time of recording.
- Manufactured under license from Dolby Laboratories.

Input/Output connectors

Audio/Video input/output	10 pin connector Input/Output auto switch Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced Audio signal: 327 mV (at Load impedance 47 k Ω (kilohms)), Input impedance more than 47 k Ω (kilohms), Output impedance less than 2.2 k Ω (kilohms)
USB jack	mini-B

LCD screen

Picture	6.2 cm (2.5 type)
Total number of pixels	123 200 (560 \times 220)

General

Power requirements	7.2 V (battery pack) 8.4 V (AC Adaptor)
Average power consumption (when using the battery pack)	3.0 W
Operating temperature	0°C to + 40°C (32°F to 104°F)
Storage temperature	-20°C to + 60°C (-4°F to + 140°F)
Dimensions (Approx.)	127 \times 101 \times 49 mm (5 \times 4 \times 1 15/16 in.) (w/h/d)
Mass (Approx.)	360 g (13 oz) main unit only 420 g (14 oz) including the NP-FA50 rechargeable battery pack and disc
Supplied accessories	See page 16.

Specifications (continued)

AC Adaptor AC-L200

Power requirements	AC 100 - 240 V, 50/60 Hz
Current consumption	0.35 - 0.18 A
Power consumption	18 W
Output voltage	DC: 8.4 V*
Operating temperature	0°C to + 40°C (32°F to 104°F)
Storage temperature	-20°C to + 60°C (-4°F to + 140°F)
Dimensions (Approx.)	48 × 29 × 81 mm (1 15/16 × 1 3/16 × 3 1/4 in.) (w/h/d) excluding the projecting parts
Mass (Approx.)	170 g (6 oz) excluding the power cord

* See the label of AC Adaptor for other specifications.

Rechargeable battery pack (NP-FA50)

Maximum output voltage	DC 8.4 V
Output voltage	DC 7.2 V
Capacity	4.9 wh (680 mAh)
Dimensions (Approx.)	47.2 × 6.8 × 75.5 mm (1 7/8 × 9/32 × 3 in.) (w/h/d)
Mass (Approx.)	50 g (1.8 oz)
Operating temperature	0°C to + 40°C (32°F to 104°F)
Type	Li-ion

Design and specifications are subject to change without notice.

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